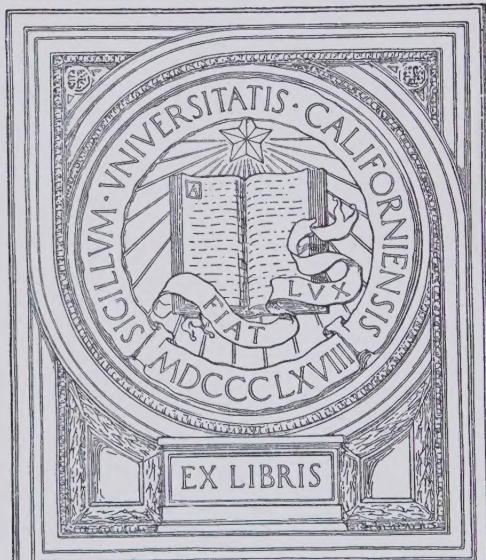


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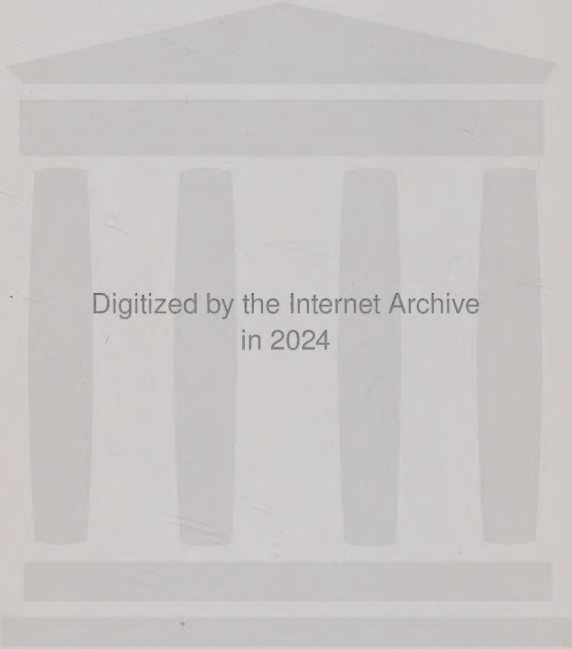
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THE PEOPLING OF AUSTRALIA

Pacific Relations Series, No. 1

The Peopling of Australia

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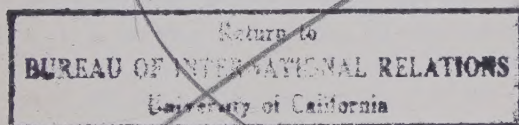
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FOREWORD.

One of the most conspicuous features of the post-war world is the self-consciousness of nations. The war compelled nations, both belligerents and neutrals, to realise and develop national unity for the protection or furtherance of national interests. This tendency was limited by the necessity of maintaining alliances for war purposes and by the forced recognition of the fact that, in the modern world, no nation could live unto itself. Thus, when the war ended, the ideas and ideals of self-determination on the one hand, and of the League of Nations on the other, claimed equal allegiance. The Peace Conference was almost daily faced by the resulting antinomy. In many cases the Conference, by drawing new boundaries, defined and actually brought into existence, upon the international plane, the national "self" which thenceforward, under the banner of self-determination, was to have the right of controlling its own destiny. The general result has been a stimulation of the spirit of nationality throughout the world, together with a growing recognition of the necessity for some means of procuring that degree of subordination of national interest to the common good which many of us believe to be essential alike to the maintenance and to the development of civilization.

The conflict of these ideas is particularly apparent in the consideration of population problems. These problems affect people in the mass and are necessarily of vital importance to the territorial states which are the political agencies controlling the peoples within their borders. The questions which arise are, in many cases,

greatly complicated by the fact that political and national boundaries do not coincide.

The difficulties arising from this circumstance of aggravation are painfully apparent in many countries of the world. They profoundly affect both internal and external policy. They stand in the path of social development, they create political and economic problems which otherwise would not exist, and they often constitute serious obstacles to international co-operation. It is the definite policy of the overwhelming majority of the Australian people to prevent the creation of these difficulties in the Australian continent.

In a modern civilized community substantial homogeneity of race is a great asset to the people, removing from their path the factitious obstacles which inevitably arise from the co-existence within the same area of peoples of divergent and often conflicting views of the world and of social, economic and political life. In this respect Australia is supremely fortunate to-day. The problems which confront us, complex and difficult as they are, would be indefinitely multiplied and aggravated by racial heterogeneity within the continent. It is firmly and, in my opinion reasonably, believed by Australians that Australia can do most to secure what the Greeks would have called "a good life" for her people by maintaining the present racial composition of the community. This is not a selfish ideal, for it is, we believe, as a free, white democracy that Australia can make her best contribution to the peace and well-being of the world as a whole. It is natural, therefore, for Australians to view with apprehension any endeavours to deal with migration as a subject suitable for general international control. The opinion of Australians is

that migration problems, in present conditions, are better handled by the States directly concerned in any particular question that may arise than by any international organization.

Population problems have many aspects other than that of migration. This book admirably illustrates the diversity of the subject. The study of the relevant material requires the services of the statistician, the publicist, the economist, the ethnologist, the biologist, the geographer, and the climatologist. I congratulate the editors of this book and the contributors to it upon the service which they have rendered by their frank and capable studies. Skilled investigation of this subject must be the foundation of wise policy, and I am sure that the collaboration of the well-known Australians which has produced this book will be welcomed, not only in Australia but also in other countries, by the increasing number of men and women who recognize the profound importance of the questions of national and international policy with which they deal.

J. G. LATHAM.

Canberra,

17th September, 1928.

ACKNOWLEDGMENT.

The editors wish to make acknowledgment of the valuable assistance received by them in the preparation of this volume. First, to the authors for their willing and honorary labour in preparing the material. Secondly, to the Institute of Pacific Relations for the handsome grant which made the publication possible. Again, to certain societies for releasing contributions to their journals, viz., the Economic Society of Australia and New Zealand for the article by Mr. Wickens, and the American Association for International Conciliation for the article by Professor Charteris. Lastly, to the Commonwealth Department of Health for permission to publish Dr. Cilento's work; to the Commonwealth Meteorological Bureau for Mr. Barkley's services, and to the Commonwealth Bureau of Census and Statistics for statistics, graphs and other services too numerous to mention.

P. D. PHILLIPS	} Editors.
G. L. WOOD	

University of Melbourne.

September 20, 1928.

“There is an inconsistency in equalising the property and not regulating the number of citizens. One would have thought that it was even more necessary to limit population than property; and that the limit should be fixed by calculating the chances of mortality in the children, and of sterility in married persons. The neglect of this subject, which in existing states is so common, is a never-failing cause of poverty among the citizens, and poverty is the parent of revolution and crime.”—Aristotle: Jowett’s tr. of *The Politics*, II., 6. B.C. 357.

“You cry up the Dutch to be a brave people, rich and full of cities; . . . yet they do all this by inviting all the world to come and live among them. You complain of Spain, because their inquisition is so high; they’ll let nobody come and live among them, and that’s the main cause of their weakness and poverty. Will not a multitude of people strengthen us as well as the want of it weaken them? Sure it will.”—Sir Josiah Child, *England’s Great Happiness* (1677).

“The measure of the healthy development of a country is not the extent of its investment of capital, its output of products, nor its exports and imports, unless there is a corresponding economic opportunity afforded to the citizen dependent upon employment for his material, mental and moral welfare.”—Conclusions and Recommendations of the Immigration Commission of the United States, 1910.

“The time has already come when each country needs a considered national policy about what size of population, whether larger or smaller than at present, or the same, is most expedient. And having settled this policy we must take steps to carry it into operation.”—J. M. Keynes, 1926.

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CHAPTER I.

THE AUSTRALIAN POPULATION PROBLEM.

By P. D. Phillips, Lecturer on Modern Political
Institutions in the University of Melbourne,

and

G. L. Wood, Senior Lecturer in Economics in the
University of Melbourne.

- I. The Need for Research.
- II. The Attitude of the Australian Public towards Immigration.
- III. The Dangers of Dogmatism.
- IV. The Labour View of Immigration Examined.

I.

A few words are necessary as to the origin of this book. Early in the year 1927 the Australian Group of the Institute of Pacific Relations began the task of collecting information for the use of representatives from Australia to the Institute Conference, which was to be held at Honolulu. A large number of the questions placed on the agenda of the Conference concerned matters which are generously, if inaccurately, included in modern sociological text-books under the rubric of *Population Problems*. Information relating to Australia upon such matters was, however, either not easily accessible or not available at all. Since the object of the representatives was to present, as fairly as possible, a reasoned viewpoint upon matters of common concern to peoples bordering the Pacific, the issue arose as to whether any real or carefully considered view existed

in the Commonwealth upon such topics. There were, of course, certain specialists who had carried on independent research. Professor Griffith Taylor, a member of the Sydney branch of the Institute, had for long shown the value of applying the modern scientific methods of geography to the question of the country's population capacity. Others, as for example Mr. C. H. Wickens, had published valuable studies. Generally these were buried in the files of proceedings of societies or in reviews or learned journals of limited circulation.

In these circumstances it was felt that a useful purpose would be served by collecting a series of essays, by individuals who had made a study of some aspects of the problems of Australia's population, present and future. Two main purposes have dictated this arrangement. In the first place, it is hoped that by rendering such material accessible encouragement will be given to other workers to pursue such studies further. It is, indeed, only when such examples of what has been done are perused that it is possible to see faint indications of the most fruitful lines of future research. Social science presents so uncharted a sea that the slightest guide to a profitable route is worth while.

But it is hoped that a wider public service may also be achieved. We are beginning to realise that public opinion only results from the stimulus of specialised research reacting upon popular impression. But we are, as a nation, still unduly suspicious of the "expert." It is not intended to suggest that democracy can solve its problems by handing over its intellectual difficulties to any individuals, however well equipped. As we conceive it, the function of research in the social sciences is to provide stimulus, guidance and accurate informa-

tion, by and through which public opinion may eventually "find itself" by the normal methods of public discussion, political controversy and a gradual evolution of a community viewpoint. Only by such a combination can we avoid the Scylla of ignorance on the one hand and the Charybdis of bureaucracy on the other. A collection of individual points of view, such as appears in this volume, will more than justify itself if it provokes public discussion less airy and vague, less uninformed, and less dictated by hopes rather than legitimate deductions, than is customary in both press and legislatures.

If this purpose is achieved the volume will fall into line with the rest of the work which the Institute of Pacific Relations is attempting in the various countries bordering the Pacific Ocean. Many problems of the social sciences are capable of more or less exact scientific solution. Many more, however, depend upon a varied collocation of factors, psychological, biological, ethnological and economic, as well as those called vaguely "political" and "social." These must remain the subject of public discussion, from which conclusions emerge by something not unlike the process known to the economist as "the higgling of the market." It is such problems which the Institute exists to attack, particularly those which have international repercussions. This attack can never take the form of definite or *ex cathedra* solutions. But who can deny that there is a place for objective inquiry, the patient collection of "facts," and the fair statement of different viewpoints. Finally, it will be abundantly clear to every reader of this book that there is no platform to be fought for, no policy to be realised, and no common

agreement upon anything, save that honesty, accuracy, and insight, alone justify publicity as they alone render it valuable.

In the light of the foregoing it is perhaps superfluous to suggest that the views expressed by the contributors to this volume exemplify anything except their own personal conclusions. Indeed, in this lies their chief value, for it is personal and unhampered deductions which are most provocative of discussion and most fruitful, in the long run, in mobilising the thought of the community. Some of the essays have already been published elsewhere, and are reprinted for purposes of comparison, and in the hope that greater accessibility may bring them to the knowledge of a wider public.

Finally, it may be observed that all the contributors are drawn from the ranks either of University teachers or public servants whose work brings them in contact with such problems as are here dealt with. We do not suggest that such classes of men and women are not admirably suited for such work as is here presented. But there is a crying need in the Australian community for a development of that class, vaguely but sufficiently described as "publicists," which does so much to clarify and assist social discussion in the older countries of the world. Such men as Lord Cecil, Sir Josiah Stamp, Mr. Sydney Webb, or Dr. Nicholas Murray Butler—to take representations of four very diverse social stand-points—illustrate the fine flowering of a well-nourished intellectual soil. The resources of Australia are still undeveloped in this sphere, as in more material and mundane aspects. But it is the preparation and collection of such work as is to be found in this volume which brings home to us once again how urgent is Australia's need in the direction we have indicated.

One outstanding characteristic of the majority of these essays is a certain air of "austerity," an atmosphere which might be described as "defensive aggression." A chemist or a physicist comes to his conclusion without, intellectually speaking, finding one hair out of place. Not so with these quasi-political matters. There is a certain apprehensiveness, a half-glance at possible public reactions, and a consequential sturdiness of assertion which is not so generally found in similar work in England and America. We draw attention to this matter because we think the cause is fundamental in Australia at present and worthy of comment. This cause is the isolation of our intellectual workers. Not only is the continent as a whole isolated from the rest of the world. Professor Brigden calls attention in his contribution to the "lag" in economic movements between Australia and other countries. There is a similar "lag" in intellectual matters. Further, there are the disadvantages resulting from the fact that the number of workers in this field is comparatively small. In addition, they are separated from each other by the considerable distances between the capital cities in which they work. This is bad enough in the east, but even worse when the location of Western Australia is considered. The result of this situation is that the opportunity for continuous meeting and discussion, the give and take of enlightened criticism, is severely restricted. We think the point is worth making here, in view of what has been said as to the place and value of research in the social sciences in Australia. We think also that it goes far to explain the note which is struck by more than one of the contributors to this volume, and which is not so common in similar writings

in other parts of the world. Fundamentally, however, it does not appear to us to prejudice the scientific value of the methods pursued. Furthermore, it is, we think, justifiable to suggest in this connection that the development of such organisations as the Institute of Pacific Relations may help to some extent to overcome these difficulties, acting as one of those "thought organisations" which Professor Graham Wallas has aptly described and evaluated.

Dominating every other consideration, there is one conclusion which will hammer itself into the mind of every reader of these essays. That conclusion is the unmistakable need for further, more organised, and adequately subsidised research into these and similar problems. Every one of our contributors has felt that the work is as yet tentative, and the most painstaking effort a mere prologue. We cannot in this respect do better than borrow the slogan frequently used in discussions on migration. The need we have here, too, is for "men, money and markets," that is to say, for trained workers, adequate endowments, and a public ready and willing to encourage by its interest and sympathetic consideration the best kind of scientific work.

And here we think that one or two of these essays should provide a useful guide, if the current discussion as to a Bureau of Economic Research should materialise. At the present time it is beginning to be realised that organisation for research may be something more than an intellectual amusement—that it may be a profitable investment for a young community. This lesson has been learned so far as applied science is concerned, and the Commonwealth Council of Science and Industry is the practical form in which the belief has found definite

expression. A growing body of opinion favours some comparable institution for investigation into problems of economic science. This volume contains indications enough of profitable lines of inquiry. There are such major problems as that of the absorptive capacity of the continent for population, and the more subtle and elusive question of the optimum size thereof of population, and there are the more detailed studies, such as urbanisation, or white settlement in the tropics, or the general quality of the population. To the question frequently asked by the layman: "But what would such a bureau do?" we can answer: "Look within." Nor do we think that the matter can be left merely to official organisation. Equally important will be the organisation and development of University schools of research and independent endowments. It is a matter upon which Australians will do well to ponder, that portion of the necessary funds for so humble an enterprise as this volume had to be sought outside Australia in the munificent benefactions of the United States, made available through the central organisation of the Institute of Pacific Relations. There is some justification for this in the fact that many of our problems have international aspects, which makes them of importance to other countries—in particular, other Pacific countries. But if we would aspire to nationhood we must be prepared to play our part in the intellectual sphere as readily, and as well, as we have done in the sphere of war and sport.

A further useful indication of the value of such research arises from a consideration of some of the contributions to this book. It is a mistake to suppose that economics alone offers a field for profitable research in

the social sciences. Indeed, these essays show clearly enough the unequal development of all these closely allied studies. The statistical work has been carried to a very high pitch, and stands well above much in the other spheres. But many of the newer aspects of economics are still in the embryonic stage, gradually feeling their way to revaluations in the light of modern conditions. Mr. Benham's article on *The Optimum Size of Population* is an excellent example of this process in operation—a vivid cross-section of one particular aspect of growth. It would be a grave disadvantage if this unequal development should be over-accentuated. Some inequality is inevitable. But altogether too little attention has been paid to close research into what are sociological rather than economic matters.

From this point of view we think it worth while drawing attention to one or two aspects of the article contributed by Professor Agar. There the author considers the question of what is known as the differential birth rates of different social grades. The available evidence with regard to this matter in Australia is exclusively to be found in census returns. From some points of view these returns suggest that the phenomena in Australia are not the same as in older and more thickly settled countries. It may be that there are no differential birth rates as between social grades in the Commonwealth. There can be no certainty about this matter. Professor Agar, indeed, is of a contrary opinion. But here once more is an obvious example of the pressing need for local research. It is to be remembered that the substantial basis for the conclusions of Eugenics in England is to be found in the extensive and detailed field work carried on by schools like that

of Professor Karl Pearson or Carr Saunders. But how dangerous may be the application of their discoveries to Australia. It may be that our whole situation is entirely different. Detailed local research alone can decide such a question. And further, suppose such research does show such a difference as we have supposed, how important may be the results for other countries? It might be that free general education, a generous standard of living, and relative vertical mobility between the various social grades tends to eradicate the differential rates to which such importance is attached. All of this must remain mere *dilettante* supposition in the absence of adequate research. But it is surely essential for the healthy development of these minor social sciences that the raw material for them should not be collected exclusively from older countries. These countries may be excessively industrialised, and all have an unfortunate legacy so far as their social conditions are concerned of which we are relatively free. It is possible, therefore, that research in this country may yet throw light on problems of a biological nature which are obscured by the conditions of the environment elsewhere.

II.

The statements of individual points of view which are collected in this volume are often contrary to, rather than a reflection of, public opinion upon the same topics amongst the Australian community. Had the man in the street been asked for his convictions on these matters, in hardly any case would he have aligned himself with the authors. It is not without value to attempt, therefore, if very inaccurately, to summarise

what is believed to be the general Australian viewpoint. This is the more important because it is through "population" and "migration" questions that the Australian approaches generally such international questions as he feels to be significant for his country. The dominating attitude in this direction is, undoubtedly, an intense nationalism. The problem of Australia's population and of migration to the country is considered exclusively and entirely a matter for Australia and Australians. Mr. Benham's view of the theoretically "artificial" state of mind of the economist when considering the question of "optimum size" is the view of the Australian in practice. We do not mean to suggest that he devotes his attention exclusively to economic questions. But we emphasize the fact that these matters are seen from a purely national viewpoint. There is perhaps nothing very strange in this, for the habit of viewing any political question from something other than a national viewpoint is as yet rare in the world. But, as we have said, these particular matters have international aspects, and here Australia's self-centred attitude becomes especially noticeable. Moreover, the rest of the world is not quite so convinced that such matters can be dealt with adequately upon the basis indicated. Population tends, more and more, to be viewed internationally. And this brings us to another general characteristic of the common Australian view—that is, a curious sensitiveness, almost nervousness, in discussion. It is felt, though the feeling may be rather unconscious, that general discussion is surrounded by dangers, and that a wise policy will avoid the raising of any issues which could be made the subject of international debate. More than once international proposals

and conferences have been the object of suspicion for this very reason. Not a little of the hostility to the Geneva Protocol of 1924, sponsored by the League of Nations, was due to just such a sensitiveness. Indeed, the frame of mind is very similar to that which dictates so much of American foreign policy in its desire to avoid even the semblance of entangling foreign alliances. We shall have something to say later of the White Australia Policy, and clearly enough it plays a part in forming the mental attitude we have attempted to describe.

But that is not the whole of the matter. Even within the family of the English peoples there are indications that the same attitude is at work. It has been urged frequently enough since the war that the interests of the Empire demand a redistribution of population, particularly as between the Mother Country and the comparatively empty spaces of the Dominions. We do not propose to embark on a discussion of this proposition, nor to consider how far migration could provide a real remedy for present maladjustments. Various aspects of this problem are discussed elsewhere in this book. But it is significant that an argument which has powerful sentiment as well as some logical force behind it, makes very little headway so far as the man in the street is concerned. It may be that it is as yet too early to judge of this matter. But eventually the greatest obstacle will prove to be not any reasoned objection to the policy, but the almost innate disinclination of the Australian to view questions of population and migration from any broad point of view.

There is also this further significant aspect. We have suggested that these problems present the chief matters

upon which Australians concern themselves in international affairs. Unfortunately they are also matters upon which Australians tend to shun an international or co-operative attitude. In many respects this creates an appearance of selfishness and self-satisfaction not justified by other aspects of the national life. One example alone is permissible in the space available to us. The attitude of the Empire to the question of so-called "compulsory arbitration" in international disputes by the World Court has been dictated to some extent by the attitudes of the Dominions. In Australia this could spring alone from the fear that "migration" might at some time cease to be a pure question of domestic jurisdiction and become a subject matter of international law. This may or may not be a well-founded fear, but its existence creates an attitude which suggests that a peace-loving country such as Australia hardly welcomes the advance of arbitration. This is the more striking when we consider how readily Australians have adopted the principle of arbitration in their own internal affairs. At bottom we believe that these policies would not be opposed were it not for the excessive sensitiveness which distorts public opinion.

When we pass from the general questions of migration to the specific matter of the White Australia policy the largely unconscious and almost instinctive basis of belief becomes even more clearly marked. The question of the logical basis of the White Australia policy is discussed elsewhere in this volume by Professor Charteris. We do not propose to evaluate here that reasoning. But we would insist that for the vast majority of Australians such reasoning represents merely a rationalisation of views and beliefs which have long since

sunk deep into the hinterland of the popular mentality. "It has become," in the words of popular oratory, "the settled policy of this country." The closest analogy in the sphere of politics is, we imagine, the Monroe Doctrine. It is said that an American citizen once taunted a friend with his disbelief in the Monroe Doctrine. With immediate indignation the friend repudiated the imputation. "Of course, I believe in the Monroe Doctrine," he retorted; "why, I'd fight for it. If need be I'd die for it. All I ever said was that I didn't really understand what it was." The story might almost as well be told of "White Australia." The moral, if there is one, we believe to be the same. None of this discussion is intended to throw doubts on the propriety of the principle. But it is well that we should realise the psychological values wrapped up in our political beliefs. This particular belief is one of those "fundamentals," such as Bacon envisaged, beyond the reach of the prating tongues of lawyers and politicians, something as sacred and untouchable as was "prerogative" to the Stuarts, or "natural rights" to the French Revolutionary.

It is more difficult to be quite sure of the general reasons which have gone to build up this belief. Official explanation has supported the doctrine largely by arguments drawn from the economic sphere—the difficulties of maintaining a high standard of living when faced by competition from races with a lower standard. It is said that the policy is not racial but economic. This may be quite true. But at the same time it may be doubted whether the popular belief is traceable either solely or substantially to this source. It is useless to deny that to a considerable extent the general attitude is the outcome of "race prejudice." We do not justify

this, but if we are to picture accurately the public mind, wherein population problems must be studied, we believe this admission to be essential. As we have said before, Australia is an isolated country, and we suffer from some of the inevitable mental defects of isolation. We readily believe that "alien" and "barbarian" are interchangeable terms. Unlike the United States, we have never experienced the stimulating, if also trying, experience of the melting pot. We are an extraordinarily homogeneous people, as Mr. Lyng's essay indicates. And the limitations of our experience have left their traces on the national mind. All this is in a way the more surprising because Australia's views are based upon an experience almost exclusively confined to Chinese. Democracy is not apt, as a rule, in learning, except from its own mistakes or successes. But we have made our minds up with a curious and in many respects uncritical certitude. National groups, even of European stock, must conform rapidly to type, or suffer the marked hostility and intolerance which characterises a young community. As to European racial ingredients, the more thoughtful members of the public may have honest and serious doubts as to how far they will fall into the political and social habits of the community. Here we may be face to face with a genuine sociological problem, calling for scientific approach. But generally there is no such rational and hesitant attitude. The popular mind stops not to set itself nice questions of political adaptation, but spontaneously rejects all those who depart from the prevailing type, and has no hesitation in deciding that in such rejection lies the social progress of this community.

We have thought it advisable to sketch in outline the

public opinion of Australia on the general questions of population, and we suggest that it is marked by a somewhat jealous "nationalism" and by a strong sense of the value of racial purity. When we turn to an examination of public opinion upon the problems more particularly dealt with in this volume, the result is not a little surprising, in view of the "isolationist" tendencies we have referred to in the foregoing remarks. In the first place, there is a general belief held by the community that the continent is capable of "carrying" a population more or less equivalent to that of the United States of America. Generally it is contended that, as the area of the continent is roughly comparable, the ultimate total population will become the same. Despite all that has been written by geographers, economists and agricultural experts, this belief remains, and, indeed, is constantly repeated upon public platforms and in the popular press. The view, indeed, is to be found almost as often in the expositions of responsible leaders as in less reliable declarations. Any parliamentary debate upon immigration or allied topics will furnish examples of the comparison to which we refer.

Elsewhere mention is made of some of the estimates which have been published by those who may claim to speak with authority. The diversity in their views is marked enough to induce some doubts of the methods employed and of the possibility of accurate prophecy in this connection under the limitation of existing information. It may well be that the proper frame of mind for the present should be one of scientific scepticism. But we would emphasize the fact that popular opinion has not yet apprehended the problem as one of scientific

calculation at all. Equality of area with other countries is assumed to mean equality of "carrying capacity," and the uncertainty of scientific deductions is exchanged for the certitude of popular hope and faith. Presumably a vague feeling of humiliation fills the heart of the people at the thought that we may never equal the teeming millions of other countries, and since desire dictates thought to no small extent in a democracy, the popular view which we have indicated is the result.

The first necessity for social science, whether through the work of the economist, geographer or food production expert, is to persuade public opinion that the question is one for careful research and objective investigation. It is more important, at the moment, that this belief should be established than that any particular conclusion should be insisted upon. The views of more than one of the authors whose work appears in this volume should go far in this direction, if adequate attention is paid to them. Generally there would appear to be an insistence that vast areas of the continent are unsuitable for any considerable settlement, and that Australia is, from the population point of view, like a very large but empty frame, rich gilt surrounding comparative blankness. The precise capacity of this frame may still be problematical, but of the substantial truth of this representation of the situation as a whole none of the authors who deal with the matter has any doubt.

Once this idea becomes generally appreciated, it will become necessary to insist upon a public recognition of the concept of an "optimum size" apart from the question of total capacity. This conception is neither simple nor easily reduced to accurate quantitative

estimate. We mention the matter in order to throw into relief another facet of public opinion. It is not only generally thought that Australia could support a population of something in the order of a hundred millions or more, but usually assumed that it will be advantageous to achieve the maximum, whatever it may prove to be. Partly this springs from a belief that bigness is synonymous with greatness. Our hopes and our pride coincide in urging us towards an increase in the scale of our national life. Moreover, the world-wide opinion, largely a legacy of the 19th century, that all prosperous nations inevitably increase their numbers at a rapid pace and on an extensive scale still dominates much of the thinking of the Australian community. In this respect we have a clear indication of one of the "lags" in the intellectual currents of the world, for the post war views of European peoples, that increase may be a curse rather than a blessing, has not reached popular consciousness as yet. We do not intend to suggest, of course, that the present population of Australia represents anything like the most advantageous total population. We do insist, however, that the general belief in the need for increase does not spring from carefully reasoned considerations as much as from long harboured but little examined attitudes of mind.

When we turn to consider popular views as to the best way to achieve this increase we meet yet another paradox of public opinion. We have argued that the prevailing and almost universal current of thought believes in the possibility of very extensive increase, and assumes that such would be desirable. But there is by no means anything like the same unanimity as to

whether the process of increase should be hastened or not. Here, we must confess, there is a great division between classes of the community. It is hardly necessary to insist, of course, that there are not great numbers of exceptions in the classes we are about to describe, but we believe that there are at least two substantial bodies of opinion, roughly following the classes of economic division. The well-to-do classes, industrial and professional as well as primary producers, generally approve a policy of "speeding up" population growth. There is, of course, no agreement as to the best methods of achieving this end. Still less is there a strongly expressed willingness to make substantial sacrifices for any such policy, if such should prove necessary. Indeed, it would generally be contended that this policy will involve gain and not loss, both immediately and in the future. And here we must mention the possibility that employers of labour may, in fact, entertain hopes that substantial increases in our numbers may result in a general reduction in wage rates and so in a cheapening of the costs of production. Such arguments would not, of course, command any general support, and are not made publicly. But they do exist, and doubtless prompt views which are supported by other considerations, such as the welfare of the Empire as a whole, or the interests of defence. Generally speaking, conservative opinion favours a forward policy of migration.

We are not concerned either to advocate or oppose this policy, but merely to point out that it is backed by considerations both of public interest and private gain. Amongst such members of the community it is generally contended that the present rate of increase is disappointingly slow. The article by Mr. Wickens, which appears

in a later section of this volume, demonstrates that this view is quite untenable. But here again, as in regard to other aspects of this subject, popular wish triumphs over objective fact. The question of what is the "optimum rate of increase" may be extraordinarily difficult to answer. We believe that it is. But it is worth asserting here, as Mr. Wickens shows in detail, that the present rate is not slow, either compared with other countries, or other periods in our own history. The views of the Commonwealth Statistician are far from being accepted in governmental quarters. Wherever a forward policy prevails it is customary to condemn the present slow rate of growth. Thus Sir Granville Ryrie, the present High Commissioner in London, suggested in a speech to the Overseas League in November, 1927, that a rate of 100,000 per annum represented a reasonable objective under present conditions. Nor are there lacking experts who share this view. Professor J. W. Gregory sees nothing extravagant in such figures, though he estimates himself a total annual immigration rate of from 60,000 to 80,000. (*Human Migration and the Future*, London, 1928, p. 154.) The higher of these figures is based upon the experience of the United States, where immigration reached the total of 1.3% of the population in one year before the war (*op. cit.*, p. 179). Since, however, this astonishing absorptive capacity was based upon extensive industries readily employing large masses of unskilled labour, the same author is prepared to admit that the proposed rate for Australia may be rather too liberal. We think it reasonable, however, to call attention to a careful estimate, which is at variance with the one expressed in this volume, in order to suggest how much this subject

demands careful inquiry, and how far we are from anything approaching scientific certainty.

Contrasted with what we have called the well-to-do classes stand a very considerable portion of the wage-earning population. Among this group we believe there is no very real desire here to "speed up" the rate of increase. To a certain extent this section of opinion fluctuates with changes in temporary prosperity, and particularly with the state of the labour market. When general unemployment increases there is a tendency for the opinion "against migration" to harden and become more vocal. But at all times there is a certain underlying nervousness lest too rapid a rate of increase may threaten the standard of living, which has been built up with considerable effort. There may even be in some sections a desire to maintain the very favourable conditions in which labour operates by a policy not easily distinguishable from monopoly. This view, like the hope for "cheap labour" before mentioned, is not publicly expressed. But doubtless it does inspire some individuals and induce certain attitudes. It would be a mistake to exaggerate the antipathy of this section of the community towards the problem of population increase. At the most, the question is one of degree. We would remind readers of what we have said concerning the general feeling throughout the country as to total capacity, and the advantage of growth.

Moreover, it is possible to discern certain conflicts, more or less concealed, between this general view of the question as a whole and the more immediate reactions of migration upon existing conditions. It is worth noting, for instance, that the year 1927, which showed the

highest total of net immigration since the war, found Labour Governments in power, at some time or other, in every State in the Commonwealth. It is the State Governments, of course, which at present chiefly control the *rate* of immigration. Some perception of these broad conflicts of views, coupled with the underlying agreements, finds expression in the policy that migration should be directed into the channels of land settlement. The supporters of a forward policy endeavour to placate the more critical by readily admitting that the newcomers should not be allowed merely to swell the urban populations. How far this policy has been successful may be gauged to some extent from Mr. McPhee's contribution. One aspect of this matter is worthy of particular emphasis. The course of public controversy too often leads to a distortion of the actual facts by those who desire to commend their own ideal by asserting that it is being realised. When critics of the "forward" migration policy contend that newcomers merely swell the urban labour markets, they are met by statistics of land settlement, and by the total number of newcomers who have been "placed" in rural areas. Too often no attempt is made to estimate the net gains to the rural population. A striking example of this is to be found in the recent history of Victoria. During the period 1904-28 some 15,000 new settlers were placed upon the land under various Closer Settlement Schemes at a total cost of £34,000,000. But during the period 1922-27 alone a total of 14,000 people left rural occupations for the towns and cities. Clearly from the point of view of the effect upon the community, this process is just the same as if the newcomers had been "drafted" straight into urban occupations. Indeed, to

the extent that the majority of such migrants are drawn from industrial centres in Great Britain and are generally equipped with industrial experience, the process probably involves a considerable loss in the total net efficiency of the community. In view of the difficulties of collecting statistics, and of the great decline in mining, however, estimates of rural depopulation must be received with the greatest caution.

We have attempted to draw a contrast between the opinion of the man in the street, so far as this may be hazarded from an individual point of view, and that of scientific inquiry. What is the general result of such comparison? We think this may be postulated with reasonable safety. Public opinion entertains certain views upon particular aspects of the problem with a staunch conviction which almost prohibits free public discussion. Yet these aspects are precisely those upon which the skilled investigators entertain most doubt and differences of opinion. Any view may in the end prove to be correct. No view at present can be advanced with any certainty. We think that there is a great need for research into three major problems in this aspect of the subject which we describe, shortly if inaccurately, as the problems of maximum absorptive capacity, optimum size, and optimum rate of increase. As we show hereafter, it is impossible to consider that any existing scientific conclusions may not be attacked with the weapons of scientific method. That only means that the matter demands yet more investigation. It is to be remembered that no country has yet attempted on any extensive scale the task of deliberately hastening the growth and settlement of its own population by positive policy. It may be that such an effort will merely result

in futility before the operation of economic forces which are insufficiently investigated and understood, and which therefore prove incapable of control. The one remedy, or rather the only possibility of success, lies in the utilisation of expert knowledge. But such knowledge will be wasted on a public which fails to appreciate that it alone provides an adequate weapon for such an attack upon "natural forces."

The greatest need of the community as a whole is a "research conscience." There are signs that such is beginning to develop. Perhaps one of the most significant advances in this direction has been the foundation of the Commonwealth Development and Migration Commission. Some account is given elsewhere in this volume of the work done by and the dangers which beset this body; but we would take this opportunity of pointing out that the need for research cannot be met entirely by governmental organisations. Australians are accustomed to looking to governments for assistance in almost every walk of life. Assuredly, however, the organisation of thought is one of the directions in which the State soonest reaches its own limitations. Obviously, there are many debatable questions concerning population problems in which a complete freedom from the dictates of "policy" or "public opinion" is essential. If this is not realised, so-called research may prove even more dangerous than it might otherwise prove useful. What is needed is a courageous probing of many of the assumptions which underly existing policies. It is not, perhaps, overwise to look to departmental activities to carry on this work. It has been well said that the real class conflict in modern self-governing communities is between the minority with

knowledge and the majority without it. Population problems in Australia constitute a stage for such a conflict beyond a doubt. Here, if anywhere, is presented one of those races between education and disaster which Mr. Wells has described as characteristic of civilisation. The publication of this volume is proof that some individuals believe the mind of Australia as a whole appreciates the issue, and will rise to the occasion.

III.

We have insisted before upon the tentative nature of such conclusions with regard to Australia's capacity as have been put forward up to the present time, and upon the diversity which marks them. It seems useful to refer to some of the matters discussed by contributors in order to remind readers of other and conflicting views, which are useful for comparison and necessary if we are to achieve intellectual stability. There is so little literature on such subjects considered by Australians as a whole that it would be unfair to other writers, and inconsiderate to the public itself, not to draw attention to some few matters which have been the subject of active scientific controversy.

The first matter in this respect which demands mention is the question of Australia's "carrying capacity." Mr. Benham estimates an optimum population of 14 millions. This is, we think, the very lowest figure which has up to the present been suggested. On the other hand, it is true that little attention has been directed to the question of the "optimum" as opposed to a maximum capacity, assuming the maintenance of the present standards of living. It may well be that the difference between these two "objectives" is not so marked as

would appear at first glance. But even assuming the second method of measurement, there is still a wide divergence of views. Professor Griffith Taylor's total of 20 millions has been freely quoted, though seldom popularly approved. The same conclusion is reached by Professor Ellsworth Huntingdon, of Yale University (see contribution by Professor Charteris). On the other hand, Professor East, of Harvard, takes a slightly more liberal view. In his *Mankind at the Crossways* he rejects the idea that the population will be able to increase, in view of the food resources of the continent, at its present rate, in which it doubles itself about every 34 years. "In another century," he writes, in the work referred to above, "if this increase should go on, Australia would have 40 million people. And they cannot stand this rate of increase. Therefore, Australia must be marked off the list as a source of any but temporary support for indigent peoples."

In another passage he takes an even more pessimistic view. Thus he writes: "These worthy people are living on the rim of a soup-plate. The rim is fertile—at least in spots—the bowl is a barren desert without water supply. There is no hope of any very considerable irrigation projects. Out of their 1904 million acres, there are only about 40 million acres of arable land by the most optimistic estimate. Thus Australia, when treated as a place to live, shrinks to the size of Spain or, possibly, Italy. It is probable that in less than 30 years she will cease to be a food-exporting nation." (*Mankind at the Crossways*, p. 85.) Against these views, however, may be set some larger estimates. Dr. A. E. V. Richardson, of the Waite Agricultural Research Institute in Adelaide, South Australia, has made esti-

mates of the future wheat-producing capacity of the country, which indicate that the maximum possible wheat yield would be sufficient to support a population of 100 millions.

On the other hand, Professor J. W. Gregory seems inclined to support ex-Prime Minister Hughes' estimate of 100 million—apparently as an optimum. Thus he writes: "Even cautious experts estimate that Australia could accommodate a population of 45 million people. An estimate which I prepared some years ago made the figure 100 million, and I was recently chided by an experienced man of affairs who, after a visit to Australia, told me my estimate was ridiculously under the mark, as the continent could easily accommodate a population of 200 million." However, the estimates of "experienced," but anonymous, "men of affairs" do not demand very serious consideration. Moreover, Professor Gregory himself appears to harbour some strange illusions as to the country, for he tells us elsewhere (*op. cit.*, p. 159) that "Australia has a population of approximately 6 million, and its increase to 25 million by natural development without immigration would probably take two centuries." This at least appears a quite unjustifiable statement, in view of the present rate of increase. Enough has been said under this head to suggest that independent checks from different points of view would be of considerable value.

A debatable point of a rather different kind emerges from a consideration of the papers of Professor Agar and Mr. Lyng. Both these contributors place reliance upon a theory which adverse critics have styled the "nordic myth." This theory assumes the existence of a race with psychological and social characteristics

wrapped up with the possession of a round head, fair hair, blue eyes, and a Northern European birthplace. The theory may be valid, or may prove to be a mere invention of the "bookmen." English-speaking peoples have been twitted with a tendency to glorify the virtues of the "Nordic," and then modestly to insist upon the high percentage of the nordic strain in their own communities. Critics have suggested that there is no adequate proof that any characteristics other than the physical ones selected as the basis of classification can be attributed to these so-called "races." The assumption of superiority for the northern race may prove to be a "myth." Moreover, there are signs that Australia may be swamped by some of the race dogmatism which has swept over America. It is a fear of such a development which prompts us to record the large volume of expert anthropological opinion which would completely reject the basic views of the authors we have mentioned. To embark upon any criticism of the views they have expressed is not our objective. We desire merely to call attention to other expert views, and to remind readers that from the point of view of social science this is another question upon which dogmatism is the only indubitable error. From this point of view the statement of Professor Hankins with regard to American immigration is equally applicable to Australia. Writing on *Race as a Factor in Political Theory*, he explains: "There is thus to-day no convincing demonstration of the innate superiority of one European nation over another. . . . There can be no longer doubt of differences in average mental capacity. But the average differences are slight in comparison with the wide variation of abilities in each group. . . . In

consequence, the fundamental questions become less those of race than of the relative rates at which the different levels in each race or nationality group are added to the population. . . . Vastly more important than any possible differences between the average capacities of the European races are the individual differences among members of the same race." (*Modern Political Theories*, pp. 547-8.)

Mr. Lyng's paper is itself a valuable indication of the extremely mixed character of all the modern nations, and may give us reason to pause before embarking upon too rigid a policy of national discrimination with respect to immigrants. There are certain obvious political and social advantages arising from additions to the population without the introduction of too much, and too suddenly introduced, diversity. But there is always the danger that homogeneity may lead to stagnation. It is worth noting that "quotas" are already established under the Immigration Restrictions Acts, limiting the inflow of Greeks and Jugo-Slavs to 100 per month. On the other hand, the rigid limitation of 260 Maltese per annum has not been persisted in since 1924.

The conflicts which rage at present in the ranks of the eugenists as to the existence of any correlation between the economic classes, and differential innate mental capacity is vividly illustrated in Professor Agar's own discussion. This unsolved problem will probably continue to excite attention for some considerable time. In view of its importance, we can only suggest the very fruitful field for research presented by a community where there is so much equality of educational opportunity and comparative absence of class barriers. The old antithesis between "nature" and "nurture"

is not persisted in quite so vigorously, perhaps, as it was thirty years ago. But surely there is no country in the world where "nurture" is relatively speaking more substantially similar amongst various classes than is the case in Australia, so that here is a great opportunity, —almost a sociological "test case."

With regard to Dr. Cilento's very vigorous contribution to the problem of white settlement in our northern tropics, it is perhaps of some value to point out the direction in which future inquiries may be guided. The author confines himself for the most part to a consideration of what we may call the "gross healthiness" of these areas. We have still to consider and investigate questions as to the comparative comfort and attractiveness of such areas for working white people, apart altogether from morbidity and mortality. It is difficult, though perhaps not impossible, to measure the comparative "amenities" of different areas statistically. But men and women may feel the burden of life more heavily in certain areas, even though they do not sicken or die in a greater numerical ratio. This is admittedly a problem of some subtlety, but one which will have to be investigated thoroughly. Dr. Cilento himself refers to the unsuitability of much of the "materiel" of living in such areas. We have still to consider the creation of conditions which will more or less equalise the comfort and luxury of our population. This is a sphere in which women workers might well prove extraordinarily useful. Moreover, economic considerations will become involved as the investigations progress. It would seem unlikely that we shall succeed in settling these areas, *pari passu* with the more temperate south, if there is a marked discrepancy between the

amenities of life in the two divisions of the country or, what is just as important, if there is a marked discrepancy in the cost of establishing a regime of equal attractiveness. As this problem is pursued, we shall be forced to consider the reactions which such costs may have upon the economic net productivity of the region. Altogether the problems presented involve the co-operation of health expert, economist, and social investigator, before the ground can be effectively cleared.

One question which arises from a consideration of Dr. Cilento's statistics may be mentioned. Some of the records refer to the Queensland population as a whole. This, of course, includes many people who live in comparatively normal geographical conditions, in contrast to the actual tropics which are assumed for the purpose of discussion to be abnormal. It is perhaps necessary to pursue these statistical inquiries further, so that careful comparisons may be made between these two closely related areas. Not the least valuable part of Dr. Cilento's contribution is to be found in those portions which deal with the actual field research carried out in the truly tropical areas. It may well be that a dissection of the total Queensland statistics with regard to the subject matter dealt with would, by showing no deviation between the areas, further clinch the argument which is developed in this contribution. Not more than 25% of the population of Queensland is actually within the tropics, though the southern boundary is approximately 29° South latitude (see *White Races in Low Latitudes*, C. H. Wickens, *Economic Record*, May, 1927, Vol. III., No. 4, p. 123). The Commonwealth Statistician has pointed out that some data on this subject is available in certain sections of the 1921 Census returns.

"A special Census Bulletin dealing with Tropical Australia was issued in connection with the Census of 1921, and this was supplemented later by the issue of a special Part of the Census Report (Part XXVI.) on the same subject, as well as by tropical sections of Part XXVIII. (Families)" (*op. cit.*)

Professor Charteris opens the subject of group settlement in Western Australia, but the whole problem of the administrative control of new settlement is itself a subject for research by the political scientist of unrivalled attractiveness. This is something in the nature of an experiment almost under laboratory conditions, with variations in form and method which would well repay critical and comparative study. The complaint that the social scientist cannot conduct investigations under the "controlled conditions" of the physicist and chemist may be well founded in certain respects; but there is much data lying untouched in Australia which is not very dissimilar from the data which these scientists create for themselves. Each of the state governments has adopted different methods. Critical investigation would throw valuable light upon the technique of administrative methods in this country, and also illuminate that supremely difficult problem of the proper relation of administrative forms to the material and human environment in which they work. We emphasize the matter because we have already called attention to the need for developing research and scientific method not merely in the recognised fields of economics, but in all the social sciences. The intellectual "lag," which often hampers development in this country, is noticeable particularly with respect to the problems of the technique of public administration. The

renewed interest in this subject in England and America, as evidenced, for example, by the activities of the Institute of Public Administration, is barely beginning to awaken any corresponding interest in our midst. This is the more surprising when it is considered what a "much governed" community we live in. The somewhat severe, but generally accepted, criticism of the Western Australian experiment which Professor Charteris makes is not accepted by Professor Gregory. Reference may be made to his discussion of the subject. (See *Human Migration and the Future*, pp. 150-154, and the authorities there cited.) When, however, foreign commentators suggest, as he does, that "the present systems of group settlement promise well," they are somewhat inclined to disregard the economic costs of such systems to the Australian community and to confine their attention to the possible benefits to newcomers.

[See also Prof. E. Shann, "Group Settlement of Migrants in Western Australia," *Economic Record*, No. 1, November, 1925.]

IV.

With reference to population and industrial problems, comparisons between Australia and the United States have become a fashionable exercise. There are essential differences between the labour conditions in these two countries which are apt to be overlooked. From apparently similar conditions of settlement, in like phases passing from frontier to factory, from the ways of the pioneer to the ways of the entrepreneur, the economic and political reactions have been markedly different. In the case of America the great area of farm land which was to be obtained for the asking dominated the situation till 1890. Wages could not be

forced down below the amount which a man could earn by farming the free land. By 1897 there were no more good free lands, but the conditions of settlement and the alternatives of farm or factory had induced that dominant individualism which has had such marked effects on American life. The history of Australian settlement was very different. Geographical conditions made this so. As Professor Heaton has said, "Australia, once the mountains were crossed, was a heaven-sent pastoral country, settled at a time when England's pressing need was wool. Everything, soil, climate, absence of heavy timber, markets, lack of labour and transport, conspired to deliver Australia first into the hands of the pastoral pioneer." American conditions of settlement, based largely on farms big enough to provide a decent living for a family, were never repeated in Australia, which became a country of large freeholds allied to larger leaseholds. There was no bitter struggle between squatter and would-be farmer in America. The small farmer inherited the United States; in Australia, the pastoralist was king. These conditions explain the large estates, the landless majority, the congested cities and the strongly collectivist tendencies of Australia, a set of conditions adequate to account almost entirely for the different development of labour movements, different trends of industrial legislation, and different immigration policies in the two countries. The differences are so fundamental that any conception of the real meaning of the respective migration policies would be impossible without this brief historical analysis. The effect of strong individualism in the United States has been to set up wide margins between skilled and unskilled labour, which, in effect, form a double-standard,

with a lower level upon which low-wage immigrants may compete without materially interfering with conditions on the high-wage level for skilled labour. On the other hand, Australian policy has been entirely opposed to anything in the nature of a double standard, and the whole trend of labour legislation, arbitration awards, and trade-union action, has been in the direction of raising the living standard of the common labourer. The differences in rates for payment of skilled and unskilled labour are very small, and the immigrant feels the impact of a comparatively high standard immediately upon arrival.

On this purely economic aspect of the problem presented by differing standards of living, Australia has an interesting contribution to make. The immigration problem in Australia has all the features of a laboratory test, owing to (i.) the geographical isolation of the country; (ii.) the racial homogeneity of the population; (iii.) the high average standard of living; (iv.) the dual control of immigration by the Federal and State Governments; and (v.) the fact that the high and even level of workers' incomes makes Australian labour so unanimous on questions of welfare. Because of these conditions it should, apparently, be possible to compare the reactions of resident and incoming labour, and to observe the impact of differing standards with almost the accuracy of scientific experiment.

But the experiment has been vitiated by one dominating factor. Australia presents the case of an incompletely developed country which is determined to control immigration so that an influx of low-wage labour will not lower the existing standard of living. This determination has been materially

strengthened by the course of events since 1918. Before the war the stream of low-wage immigrants was still flowing towards America; but, after the Johnson Act (1922), with its "quota system" for restricting immigration to U.S.A., came into effect, a comparatively large volume of labour from Central and Southern Europe sought entry into Australia, at a time when the country was straining its resources in settling its soldiers who had been serving abroad.

Further, the Australian policy with respect to the general living standard has been to raise the level of the *ordinary unskilled labourer*. The spear-head of the opposition to immigration, restricted or unrestricted, is supplied by the attitude of organised labour. This was emphatically brought out in the evidence before the Ferry Commission.¹ The chief complaints against the Southern Italian alleged his readiness to accept lower wages and to work longer hours; in short, to flout the wage awards, especially in the sugar industry. Another reason for objection was found in the immigrant's practice of nominating relations—the "act of call"—and putting them to work at clearing and cane cultivation for what amounted to bed and board. On the cane-fields, this amounted to a direct threat to undermine the labour conditions which had been so carefully protected by the trade-unions.

The statistics of the International Labour Office show how well founded is the fear of Australian labour that living standards will be endangered by the influx of low-grade labour from Europe. The index numbers of comparative real wages in various cities, made strictly

1. Report of Royal Commission on Social and Economic Effect of Immigration of Aliens into North Queensland, 1925.

comparable by the Commonwealth Bureau of Census and Statistics, show an appalling discrepancy between the living conditions of various branches of the white race. Allowing for the unsatisfactory character of a budget based merely on food, it must be noted that the comparison was made separately on the basis of seven different national regimens, and that the general results on this basis show remarkable uniformity.

Real Wage Index Numbers Based on the Regimen of:

	Belgium and France.	Central Europe.	Great Britain.	Southern Europe.	Scandinavia.	Overseas.	Australia.	General Avege, based on Food only.
Berlin	58	74	58	59	69	63	—	84
London	100	100	100	100	100	100	—	100
Milan	45	49	43	47	46	46	—	47
Rome	45	46	43	47	46	46	—	46
Tallin (Esthonia)	33	41	34	34	40	38	—	37
Vienna	37	48	40	39	48	44	—	43
Warsaw	46	55	41	47	55	51	—	49
Melbourne (Australia)	143	135	144	147	126	147	151	142

The figures indicate a problem of differing standards that strengthens the very great uneasiness felt by all thinking people in Australia.

It must here be mentioned that, just as in America, we in Australia have had broadly different types of migration. There is the high-grade type from North Europe that has furnished such a large proportion of immigration in the past, and that has sustained so large a share of the burden of pioneering. And there is the more recent type of unskilled labour in search of quick returns in the form of high wages that is regarded, rightly or wrongly, as a menace to the Australian community and to the superior immigrants. The natural

objective of migrants of the latter class is to obtain the best possible livelihood, but they engage first in the unskilled or least attractive trades. They enter occupations where competition is more open, *e.g.*, mining, clearing and roadmaking, or where there is no protection by trade unions, *e.g.*, fruit and fish selling in the towns. Little animosity arises in these occupations, since the conditions in normal times are not sufficiently attractive to resident labour. Competition commences when the new-comers become established, save money and acquire property. It then becomes apparent that the Italian cultivator or Greek fish-seller has been more successful than many native-born workers who are similarly occupied, and opposition develops. Almost always, of course, this success has been based on such a low standard of living that the alien can undersell and outstay the competition of the native-born, and this is one of the main sources of the opposition to migration which has been so evident in recent years.

Another national phase of the problem goes deeper into the industrial capacity of native and alien labour. Enlightened opinion in high-standard countries cannot disregard the positive evils which result from the introduction of low-wage aliens. One essential principle for a healthy community is that it must justify its claim to a region by being prepared to do the manual work involved in development. This has an important bearing upon the settlement of Northern Australia. Undoubtedly the white settlers there would be temporarily in a good position if Australia yielded to the cry for indentured labour; and just as undoubtedly the dominant race would degenerate in both character and physique. There is a growing body of evidence that

indentured labour is not essential, since the researches of the Australian Institute of Tropical Medicine have shown that white men can do the manual work in sub-tropical Australia and remain healthy. Wherever it is found, exploitation of coloured labour is most degrading to whites, and Australia is unshakeable in its determination to allow no exploitation which depends on differences in standards of living. We know that if we became a community based even partially upon a slave class thinly disguised as indentured labour we would soon deteriorate. This is the real barrier to immigration of that type. Aliens coming to Australia must be brought under the same industrial laws and given the same economic status as whites. To Australian ways of thought, democracy and economic discrimination are thoroughly incompatible.

As we have said earlier, the immigration problem divides Australian opinion into two groups on the question of the desirability of hastening the growth of the population. In general, employing interests are in favour of large immigration, while the wage-earners are in favour of drastic restriction. The relative power of the two groups in Australia is shown by the fact that the immediate effect of the Ferry Report was a Federal Bill for the Restriction of Immigration, which was passed in 1925. Political relationships within the community, no less than economic reactions, are involved in the question of low-grade migration. The standard of living is the one convenient index accepted alike by enlightened and popular opinion by which to compare political, social, and educational standards. The purely economic objections to the admission of low-standard labour are greatly strengthened by the difficulty of

absorbing politically uneducated migrants into a complex political organisation which they neither understand nor appreciate. The low political standards of low-wage migrants are a positive danger involved in immigration of the very first importance. Such immigrants are liable to many forms of political exploitation, and are regarded particularly in Australia as a menace alike to liberal ideals and free institutions. On the general question of clashing standards of living, Australia has been impressed by the reports of many investigations into the American immigration problem. He who runs may read the danger to national standards. We realise from our limited experiences in Australia that there is a marked distinction between the homes of the Mediterranean and Asiatic migrants and of the native born. The Australian worker in lumber or mining camps or on the cane-fields knows that slum conditions exist there among the immigrants from Southern Europe. The Australian people has, therefore, set its face against any extension of these conditions. It believes that constant vigilance is the price of social safety. It insists that the admission of only such migrants as can measure up to our high requirements is the wisest, economic, social, and racial policy. At the same time, it is realised that the migrant's economic status is often the inevitable result of poverty, and such conditions are desired as will enable the living standards of the accepted alien to approximate those of the rest of the community. Australia will suffer no perpetuation of old-world habits with new-world wages.

These attitudes toward immigration on the part of large sections of the Australian community must be examined more closely in their bearings upon our

development. The economic advantages of a growing population have been too readily discounted by what may prove to be short-sighted nationalism, or narrow industrialism inspired by union leaders. Usually, countries that are still in process of settlement tend to place a high value upon numbers of population, and to take measures for the encouragement of quick growth. The real question for Australia to face is the economic wisdom or unwisdom of a restrictive policy.

As in the case of protection, the chief motive force behind our immigration policy has been the determination to maintain existing economic and social standards, and the effects of both are far wider than the immediate industrial results which they aim to secure. Our inaccessibility tends to retard that mass movement of population from poorer countries that characterised the last century of American history, and this retarding factor has been reinforced by our policy of selection of migrants. The co-operation of such complementary factors as the tariff, the borrowing policy, and the extension of mechanical technique in industry has effectively established a high standard of living in the Commonwealth. But internal problems connected with industrial stability, rising prices, and diminishing efficiency are beginning to manifest themselves. Protection has led to an excessive growth of secondary industry disproportionate to the increase of population, and comparative costs forbid competition in foreign markets. It is being seriously questioned whether the acceleration of the rate of our industrial development, by sinking larger and larger proportions of our capital in manufacturing to supply a severely limited home market, is not already producing adverse effects. Over-

production and excessive competition may well be exaggerating the upswing and downswing of the business cycle and depressing real prosperity. Intensity of unemployment in the depression stage may thus well be due to a home market that is expanding too slowly because of the "damping down" of immigration rather than to its undue stimulation.

Be that as it may, there is little reason to doubt that the policy of restriction applied to the import of materials and men has prevented the lowering of living standards, and preserved unchanged our economic system. The undisguised hostility of trade unionism towards acceleration of immigration is a plain indication of the way in which Australian labour is thinking on these problems. It is increasingly necessary to examine critically this attitude in the light of our developmental needs. The economic advantages represented by a rapidly increasing population in a country that is largely under-developed are far from being understood by union leaders. This attitude to immigration may well retard for many years an expansion of population that is both socially wise and economically necessary. But this mistaken attitude on the part of trade unionists is paralleled by a lack of understanding of the true position on the part of political leaders who may justly be regarded as representing employing interests. The comparisons by which our area and absorptive capacity are assumed to be equal to those of the United States, are not one whit less mischievous in their effects, especially upon overseas opinion. The fact that we have a big continent to make mistakes in is apt to lead to a species of economic recklessness, with disastrous results to our welfare.

And the maintenance of high standards has achieved results that are little short of amazing in their effect upon the quality of the population. These are well set out in a recent paper by Sir George Knibbs. He says in this connection, "It is well not to depress our optimism. In life-conditions, Australia has shown the possibility of remarkably favourable development. In the first year of life the death-rate per 10,000 per annum has, in a third of a century, fallen from 1,339 to 612.4, that is, to 46 per cent. of what it was. Even the minimum mortality of 11.8 years of age fell from 24.025 to 14.125, say, to 59 per cent. of its original value, and every age up to 86 exhibited improvement. These are things that could hardly have been deemed possible. Who, for example, would have dreamt that in 35½ years the "expectation of life" at birth would grow from 49 years to 61¼ years, an increase of no less than 25 per cent.?" He might also have added that the Australian infantile death-rate of 53 per thousand births is lower than for any other country in the world with the exception of New Zealand and Norway.

The fear of falling wages and unemployment owing to immigration is the bogey which is always in the mind of the Australian worker. The fact that the increased productive capacity due to the introduction of new labour is accompanied by an increased demand for goods is not so apparent. The appreciation of this fact is essential to a balanced view of the problem. There is, further, an attitude of mind which is too prone to regard labour as a homogeneous mass, and too little inclined to regard it as "a large number of individuals trained or fitted by nature for differing occupations, and with varying degrees of skill and aptitude." The use of the

term "labour" encourages this tendency, and disguises the fact that we are thinking of people. Such modes of thought are far from helpful in solving our population problem.

Assuming adequate natural resources and a rational distribution of immigrants among the many operations incidental to our development, there is no reason why a relatively high rate of increase of population should have a detrimental effect upon a balanced community. It certainly should not prejudice the present advantageous position of Australian wage-earners. Under effective direction the productive capacity of incoming labour might well help towards improved, rather than deteriorated, standards of living. One is forced to agree with George Soule in his contention that the rate of addition to the population through immigration would not affect economic welfare if the distribution of work and income were so ordered that the addition of any given number of persons would have an equal effect upon both the demand for and the supply of consumption goods and services and productive capital, and if the addition to the population were so distributed as not to disturb an existing balance among the various industries and occupations.

The significance of the situation from an economic point of view lies in the suggestion that if immigration *has* the effect of greatly increasing unemployment the fault lies in some pre-existing instability in Australian industry. If, in fact, the present system of protection and wages-awards does constitute a hot-house regime, wholesale unemployment is liable to assail industry at any time, and remedies would have to be applied whether immigration increased or not. Support for

this point of view is afforded by the recent report of the Development and Migration Commission upon Unemployment and Business Stability in Australia. The able analysis by Professor D. B. Copland, which is appended to that report, does not indicate that immigration and unemployment are definitely correlated in Australia. This is the conclusion that an examination of American migration movement would lead us to expect. In any case, it would be a fatuous policy that would condemn Australia to a static condition in industry, merely to guarantee existing standards, if a long-range view would point to an improvement in those standards through increased population. The statistics of immigration since Federation give no ground for the opinion that assisted immigration has had the effect of depressing industry or of lowering wages.

The operation of this process appears to involve the following economic considerations. Let it be assumed that unemployment does result from immigration. The natural effect which might be anticipated would be a gradual lowering of wages, but this would also result in diminished cost of living. The apparent lowering of prosperity would tend to discourage the continuance of such immigration. "The tides of immigration are self-regulatory," and this is the real explanation of what Mr. Wickens calls our "boa-constrictor principle" of absorbing migrants. The long-period effects would undoubtedly tend to increased production through the more efficient use of capital of all kinds; of public capital in the form of railways, irrigation works, etc., and of private capital in the form of plant and machinery. The only safe and intelligent way to regard labour is not as a reservoir to be dipped into as work is required,

but as an integral part of the industrial machine, of which natural resources, capital and management are the other functioning parts. Scientific control of development according to this view would render labour increasingly more productive, and would enable higher rather than compel lower standards. It would, however, involve also a change in the attitude of official labour towards what may be termed "head" work as distinct from "hand" work, the abandonment of the tendency to place a premium upon the merely manual types of employment, and provision for greater margins for skilled work.

The chief conclusion which emerges from this argument is that if Australia is to make the best use of its people some kind of social direction must be given to industrial development insofar as the conditions governing the employment of labour are concerned. This would involve a planned development of industry, primary and secondary, a greater degree of concentration leading towards the elimination of all avoidable wastes, the development of a better technique in management of both labour and capital, and an attempt to "iron out" the major fluctuations in business activity. We have, in short, to plan to use our existing and possible man power where it will prove most effective.

In criticising the opposition of trade unions to immigration, one must remember the hardship thrown on the unskilled labourer who has to meet the competition of new arrivals. Unless he is protected by immigration restriction from sudden and substantial lowering of standards, his hope of ever bettering his condition can never be realised. Further, the skilled labourer is sure to feel the downward pull caused by low wages in

unskilled trades, because the sons of the unskilled will seek successfully to enter skilled trade and cut wages below that level which previously appeared to be necessary for reasonable comfort. These are the problems that immigration restriction on the one hand and a compulsory basic wage on the other are designed to solve in Australia. Without these safeguards even well-built union walls cannot prevent the wage level in Australia from settling down gradually to that of Europe. That would mean the forcing down of the living standard to mere subsistence, which for us spells economic and social retrogression. The propertied classes do not feel the ill effects, for cheap labour means large profits, so that shareholders do not raise objections. Congested population means high rents, which would please landowners. Immigration means travel, and steamship companies and railway commissioners would welcome that. Only the propertyless majority would feel the harsh effects of uncontrolled competition with foreign labour, and hence the solidarity of labour on the question, especially as the legal minimum wage in Australia is such an enticing bait to attract aliens.

The evidence of other countries indicates that the entrenchments of unionism, legislation in favour of workers, and new inventions all fail to prevent the flood of alien labour from forcing down real wages. "When the most fertile lands have been occupied, when mines and factories are being operated by most modern methods, when adequate transport facilities have been provided, then an increase of population means a decrease in general welfare. If more people must be supported, poorer lands must be utilised, mines must go deeper, poorer grades of ore be extracted. In accord-

ance with the law of diminishing returns less and less real income is obtained in exchange for a day's labour by the worker.'—(King.) The bearing of diminishing returns from the land on the population problem is fully discussed in other sections of this book.

We are not unmindful of the true values involved in this problem, and our plea is for a careful and scientifically controlled policy which will combine the advantages of the long range viewpoint and the realities which face the ordinary man. In this, as in many other social problems, the danger is from the extremists.

CHAPTER II.

AUSTRALIAN POPULATION: ITS NATURE AND GROWTH.

By C. H. Wickens, Commonwealth Statistician.

- I. Data Available.
- II. Periods of Settlement and Growth of Population.
- III. The Rate of Growth—Natural Increase and Migration.
- IV. The Australian Rate in Relation to Rates in Other Countries.
- V. Limits to Growth—Population and the Means of Subsistence.
- VI. Racial Qualities and Occupations.
- VII. Growth of City Population—Longevity.

I.

At the present time a great deal of attention is being paid to the subject of population, and numerous investigators are viewing it from various standpoints, and discussing its different bearings on world problems. Thus, while some are deploring the losses due to the Great War and urging the necessity from a national point of view for replenishing the devastation, others are busy calculating the rate at which we are growing, and determining the time that will elapse before we shall have exhausted our fuel supplies, our food supplies, or even our standing room.

In the case of a new country such as our own, we frequently hear disparaging remarks concerning our vast empty spaces and the necessity for filling them rapidly with people of our own choice in order to

prevent them from being filled against our wishes with people whom we do not desire. Indeed, one will sometimes find the same writer blowing apparently both hot and cold, foretelling world calamity through the over-rapid increase of population and calamity to Australia through the slowness of her particular rate of increase.

Unfortunately, reliable records of population are available for very few countries for much more than a hundred years back. Sweden is one of the few exceptions to the general rule, and even her record does not go far into the past. In Australia we have excellent records of our growth from 1881 onwards, good records from 1828 onwards, and even fair records from the date of first settlement in 1788.

From 1881 onwards a Census of the whole of Australia has been taken on the same date in every tenth year in respect of the white population, and good materials for intercensal estimates have been available in respect of natural increase and migration. From 1828, when the first real Census was taken in New South Wales, until 1881, when the first Census for all parts of Australia was taken on the same date, the records—although not as complete as those for the more recent period—still give satisfactory results. In the earliest period, viz., from 1788 to 1828, enumerations by means of “musters” took the place of the present day census, and though some of these gave results which were very unreliable, a good general indication of the trend of growth can be obtained.

II.

We have thus, in respect of the non-aboriginal population of Australia, a more or less complete account

of its growth year by year from the initiation of settlement 137 years ago. We did not commence with the single couple that so many of the population investigators are fond of premising, but with the survivors of those who left England on the First Fleet, and who took up their residence in Australia on 26th January, 1788. This initial number was 1,204, including the military, and by the date of the first census in New South Wales in 1828 the number had increased to some 58,000, of whom two-thirds were resident in New South Wales and one-third in Tasmania. Victoria and South Australia were then unoccupied, although prior to that date a temporary settlement had been effected and abandoned in Victoria. In Western Australia there was at that date a small settlement at King George's Sound, but the colony of Western Australia had not been proclaimed.

At the end of 1850—the middle of the century, the year before the discovery of gold in Australia, and about 63 years from the date of first settlement, the population had slowly grown to 405,000, representing over that period an average growth of about 6,500 per annum. This slow growth was succeeded by the rush and whirl attendant upon the discovery of gold, and in the first decade of the new half century there was a net increase of population of 740,000, averaging 74,000 per annum.

By the end of 1860 a marked change had taken place in the constitution and in the outlook of the people of Australia, and the slow-moving pastoral people of the pre-gold days were replaced by or merged into a busy agricultural community with premonitions already of the development of secondary industries. In dealing with the settlement of Australia, writers frequently

refer to those unfortunate compulsory early settlers of the end of the eighteenth and the beginning of the nineteenth century, and ignore the real industrial foundation which was laid in the decade following the discovery of gold. The type of settler of this latter period differed essentially from the earlier rejects and had much of the robust sturdiness of character which marked the American New England pioneers of the early seventeenth century, though they may have lacked their religious fervour. The growth and development of Australia owed much to the fact that the discovery of gold in 1851 offered new prospects to many determined, hard-headed citizens who had been left gravely dissatisfied after the European revolutionary crises of 1848.

It is of interest to note that the history of British settlement in Australia to the present time may be divided into three periods: (i.) the pre-gold period of 63 years from 1788 to 1850 inclusive; (ii.) the gold rush period of ten years from 1851 to 1860; and (iii.) post-gold rush period of 64 years from 1861 to 1924. In the first period there was a growth of non-aboriginal population of 405,000; in the second period an increase of 740,000; and in the third period an increase of 4,730,000. Viewing the matter in relation to the successive centuries, we may say that at the end of the eighteenth century Australia's population, exclusive of aborigines, totalled 5,000; by the middle of the nineteenth century it had reached 405,000; and at the end of that century it was 3,765,000. It appears certain that by the end of the first quarter of the twentieth century, that is, on 31st December, 1925, the total recorded will be very little short of six millions.

In speaking of population I have so far dealt

with the non-aboriginal or migrant races. I would, however, like to turn for a moment to our aboriginal brethren, who are rapidly disappearing from the face of the earth under the blessings of civilization. Concerning these interesting and primitive people, we have little knowledge as to density of population before the advent of the white man. Various estimates have been given in respect to the numbers originally existing in the different parts of Australia, but most of these are little else than more or less well-informed guesses. Summarizing these estimates it appears doubtful whether the number at the date of white settlement in 1788 exceeded 150,000, while at the present time the number of aboriginals of the full blood in Australia is little more than 60,000, *i.e.*, in the 137 years of settlement there has been an average decrease of about 660 per annum. In the same period the non-aboriginal population has attained a total of about 5,875,000, representing an average growth over all of upwards of 42,000 per annum.

III.

Since the Census of 4th April, 1921, the average annual increase in the Australian population has been about 117,000 per annum, of which about 82,000, or 70%, has been due to natural increases, *i.e.*, excess of births over deaths, and 35,000, or 30%, due to net migration, *i.e.*, excess of arrivals over departures. This raises the general question of the nature of our growth and the way in which the two factors of natural increase and net immigration have operated. In the period of 64 years from the end of 1860 to the end of 1924, the population of Australia increased by 4,730,000, of which increase 3,580,000 was due to excess of births over

deaths, and 1,150,000 to excess of arrivals over departures; that is to say, in this period 76% of the growth of population was due to natural increase, and 24% to net immigration. Over the whole period the population of Australia increased at a rate slightly in excess of $2\frac{1}{4}\%$ per annum, the average rate of natural increase being $1\frac{3}{4}\%$ and of net immigration slightly more than $\frac{1}{2}\%$, or, more exactly, $5\frac{1}{2}$ per 1,000. The figures previously quoted for the rate of growth from the data of the last Census to the present time indicate a natural increase of approximately $1\frac{1}{2}\%$ per annum, and a rate of net immigration practically equal to that for the period of 64 years, viz., $5\frac{1}{2}$ per 1,000.

The uniformity just brought out between the rate of net immigration over the long period of 64 years and that at present being experienced suggests that this figure of $5\frac{1}{2}$ per 1,000 of population per annum represents our average net power of absorbing immigrants. It does not, of course, mean that we may not receive more than this proportion in any one year, but it certainly suggests that in our past experience "fat" years of immigration have been followed by "lean" years, and shows that our actual absorption during the period of 64 years has been, on the average, the same as that experienced in the last four years. During the period of thirty years from the end of 1860 to the end of 1890, the rate of absorption of immigration, while varying somewhat, averaged over all about $1\frac{1}{4}\%$ per annum. This was a period marked in its earlier years by the extensive development of agriculture following on the gold rush period, and in its later years by the feverish activity associated with the silver boom and the land boom of the eighties. Taking separately the three

decades in this period of thirty years, our average absorption of immigration in the sixties was 12 per 1,000, or $1\frac{1}{5}\%$; in the seventies 10 per 1,000, or 1% ; and in the eighties 14 per 1,000, or $1\frac{2}{5}\%$.

The collapse of the land boom in the late eighties was followed by the commercial and financial crises of the early nineties accompanied by some years of unfavourable climatic conditions, the outcome being that the absorption of immigration fell from 14 per 1,000 of population recorded in the eighties to less than 1 per 1,000 for the nineties, rising to exactly 1 per 1,000 for the first decade of the new century—the first ten years under federation—and still further to slightly more than 4 per 1,000 for the tumultuous decade 1911-1920. For the whole 30 years from the end of 1890 to the end of 1920, the total increase of population was 2,260,000, of which only a total of 273,000, or about 12% , was due to net migration.

This brief review in decades indicates the fluctuating character of our rate of absorption of outside population—fluctuations which an examination of data for individual years shows to have been even more marked. Such an examination would be too detailed for my present purpose, but attention may be drawn to the heavy immigration of 1910-'13, following on a period of slackness and succeeded by the war upheaval. Looking back over our experience of past years, it might almost be said that, like the boa-constrictor, we are in the habit of bolting our immigrants and then resting until we have digested them. Such a process of alternate gorging and inertness does not seem the most desirable way to organize the development of the country. A reliable estimate of our needs in this respect should be

based on a careful review of our future prospects associated with an estimate of our absorbing power based on our past experience.

IV.

Unfortunately, in these matters altogether too much stress is laid on our vast empty spaces, and too little attention is paid to the conditions existing in much of the area embraced in those vast areas. A comparison between the population of 2 per square mile in Australia and the 600 per square mile of Belgium has little more significance than a comparison between the density of population of Melbourne and suburbs and that of the population of the Mallee. In the first place attention should be given to the fact that more than one-third of the surface of Australia has an average rainfall of less than ten inches per annum, and that at present there are no means of supporting more than the most meagre population on such areas. Further, there are areas with a higher average rainfall which are subject to recurrent droughts of such a character as to render dense settlement out of the question. Finally, the topography of Australia is such that we lack entirely the river systems which furnish in some other countries such facilities for the transport and production of commodities and the associated concentrations of population.

In mentioning these matters I am not doing so for the purpose of decrying the land of my birth. On the contrary, I am proud to think that with such great natural disabilities we have made such good use of our many counterbalancing advantages that in the course of less than a century and a half we have established in the southern seas an outpost of western civilization

which in so many respects compares more than favourably with many parts of the old world. I have referred to our drawback due to the absence of navigable rivers, but few people realize the fact that in facing this difficulty we have built railways to such an extent that the mileage per head of population in Australia is greater than that of any other country in the world with the single exception of Canada. Similarly, by artesian boring and by water conservation we are aiming at making the desert blossom like the rose, but these and other great works are only undertaken because we have recognized our limitations, and little would be done if we were satisfied simply to sing the praises of our magnificent natural resources. What I have said in respect of our disadvantages in certain respects has been said for the purpose of indicating that comparisons between area and population need to be made with an eye on the area's ability to support population.

We often hear disparaging remarks concerning the rate of growth of Australia's population and advice by well-meaning critics to keep our ports open or our cradles full. To anyone who has impartially studied the rates of growth of the populations of the world in recent years, it is difficult to understand why this opinion as to slow growth should have got abroad. During the ten years 1911 to 1921, Australia had an average rate of increase of population of 2%, or 20 per 1,000, per annum, and, in company with the sister Dominions of Canada and New Zealand—each of which also increased at the rate of 2% per annum for the same period—it occupied the leading position amongst the countries of the world in this respect. In the same period the United States of America increased at the

annual rate of 14 per 1,000; Japan, 9 per 1,000; Sweden, 7 per 1,000; England and Wales, 4 per 1,000; Scotland, 3 per 1,000; and Ireland, 2 per 1,000.

It may, perhaps, be objected that the period 1911-1921 was so exceptional that it should not be used for purposes of comparison. Similar results, however, are obtained if we examine an extended period. Thus, taking the forty years from 1881 to 1921, New Zealand occupied pride of place in rate of increase of population with 23 per 1,000 per annum, Australia ranking second with 22, U.S. America third with 19, and Canada fourth with 18. For the same period of forty years Japan averaged 11 per 1,000 per annum, England and Wales 9, Scotland 7, and Sweden 7, while Ireland averaged a decrease of 3 per 1,000 per annum.

V.

Fanciful calculations are indulged in from time to time to show the impossible numbers that may be arrived at by assuming a moderate or even a very small rate of growth operating continuously over a lengthy period. The defect in any such calculation lies in the basic assumption that rates of increase can remain constant for any great length of time. The old triumvirate of war, pestilence and famine steps in promptly to check any approach to constancy, and the pressure of population against the means of subsistence which is so often spoken of as something which will arise in the distant future is really in evidence in all communities all the time. The harnessing of the forces of nature, the discovery of new lands, or of new products, or of more effective methods of obtaining supplies of products already known, act to diminish the

pressure, but not to remove it; and as soon as the wave of expansion in means of subsistence has spent its force, the effect of this continuous pressure of population is again felt. This is the basic force which has sent populations forth to open up new lands; this realization that the pressure at home is tending to reduce the standard of comfort which has been recognized as appropriate. We meet it in the story of Abraham and Lot parting company to prevent strife between their respective herdsmen concerning the pastures that were becoming too meagre for their combined flocks and herds. We meet it again in the invasion of southern Europe by the northern tribes, where—as Milton has it—the crowded north poured multitudes from her frozen loins to pass Rhine or Danube, where her barbarous sons came like a deluge on the south and spread beneath Gibraltar to the Libyan sands. We meet it again in the waves of population which have peopled or repopled North America, South America, Australia and Africa. And now in this first quarter of the twentieth century, we must realize that as there are no new continents to discover and populate, relief from the persistent urge of population must be met on the one hand by increased harnessing of nature's forces, by discovery of new products, and more effective measures for obtaining the old; or, on the other hand, by a reduction of the rate of growth of that which is the cause of the pressure. In actual fact, these are not mutually exclusive alternatives, but are all acting at one and the same time; here we may have an extension of settlement to areas not previously utilized, there an improvement in methods of cultivation; here an application of electricity or other motive power, there an economizing of the use

of fuel; here a discovery of new products, there an improvement in the qualities of existing products, or the evolution of a species better suited to climatic or other conditions; here emigration of population through dissatisfaction with local circumstances, there a gradual reduction in standard of living due to economic pressure, with a general tendency to avoid the last by a reduction of the size of the family. In this give and take, this play of forces, this advance here and recession there, we have nothing in the nature of a cataclysm; but as different tendencies prevail momentarily there result increases or decreases in the rates at which populations are increasing. There is no constant rate of increase, but a variable movement dependent on the nature and extent of the prevailing forces, and to compute a future population on the basis of a constant rate operating for any great length of time is to indulge in purely fanciful calculations.

Taking, for the purpose of illustration, the case of the three Dominions—Australia, New Zealand and Canada—we find that Australia, during the four decades from 1881 to 1921, had rates of increase per 1,000 of 35, 17, 17 and 20 respectively, as compared with 24, 22, 27 and 20 for New Zealand, and 11, 11, 30 and 20 for Canada. Reverting to an earlier comment on the mistaken idea that the population of Australia is growing very slowly, I may perhaps be permitted to repeat here the statement that over the forty years from 1881 to 1921 the population of Australia has grown at a more rapid rate than that of Canada, and that whereas in 1881 Australia had half the population of Canada, by 1921 the proportion had grown to five-eighths. Comparisons for the same decades for some of the older

countries indicate the same tendency to variation, but with a much more evident downward tendency. There is no doubt that, the world over, as the various economic tendencies in operation gradually approach the position of equilibrium, the tendency for population growth will diminish, reaching eventually the stable position in which the annual births are approximately equal to the annual deaths. At what level that position will be attained it is difficult to say.

Our present world population is about 1,800 millions, and some inquirers estimate that the maximum attainable is 6,000 millions, while others take a figure nearly double this amount. Josh Billings, you will remember, tells us that it is not wise to prophesy unless you know, and says that the hen is the wisest prophet since it only prophesies an egg after an egg has happened. I am afraid that we are not as wise as our feathered kindred, and that many of us would like to look into the future, though we have not the solid basis for prophecy possessed by Josh Billings' hen. Apart from inquiries as to the possible maximum for the world, that for Australia is of great interest, but is probably a more difficult subject for prophecy than the world's total. The possible population of the world depends on the supplies of the necessities of life furnished by the whole globe; but that of a portion of the earth's surface is clearly not limited to the supply of necessities provided by that portion, as is indicated by the case of our great cities. An estimate for Australia often quoted is that of Professor Griffith Taylor, of Sydney, who says that when Australia has reached the point of population saturation now possessed by Europe she will have a total of 60 millions of people. I do not

take this to mean that he considers it likely that such a total is Australia's maximum or even her optimum. Another investigator, Dr. Richardson, formerly of Melbourne, now of Adelaide, says that there is a reasonable prospect of Australia eventually producing a wheat harvest of 600 millions of bushels, and of thus providing bread for about 100 millions of people. If his estimate is correct, it may easily be that by the time such a harvest is attained improvements of various kinds may have been effected which will render possible an advance on this figure, but in the absence of some extraordinary and unforeseen development it appears unlikely that advance beyond that point would be very rapid. Further, it is unlikely that advance to the point so indicated would have been rapid in its later stages, since the play of forces to which I have previously referred would have operated strongly to bring about a condition of relative equilibrium. With our present rate of growth Australia's population would reach 10 millions by the end of 1951, 20 millions by the end of 1986, 40 millions by the end of 2021, and 80 millions by the end of 2056, or 131 years from the present time; that is, it would double itself every 35 years. From what I have already said you will understand that I think it unlikely that this rate will be extended indefinitely into the future, and while it is probable that the 10 million mark will be reached at about the middle of the century, and the 20 million mark some time in the last quarter of the century, the attainment of the other positions is much more doubtful.

VI.

I have dealt somewhat fully with population from the point of view of quantity. I wish now to say

a little from the point of view of quality. I do not mean to suggest that I am going to enlarge on the good qualities which we Australians possess as compared with the less fortunate denizens of the rest of the earth, but merely that I wish to refer to some few of our outstanding characteristics in respect of origin, occupation and longevity. In the first place, in respect of origin, we are now very largely Australian born; and with the progress of time we are becoming increasingly so. Thus, at the Census of April, 1881, the Australian born population represented 63% of the total; in April, 1891, 68%; in April, 1901, 77%; in April, 1911, 83%; and in April, 1921 84½%. In other words, at the present time the imported portion of our population represents about 15½% of the total. Of that imported population about 55% was born in England and Wales, about 13% in Scotland, and about 12½% in Ireland, and 4½% in New Zealand. Of the total population of Australia, therefore, more than 97½% were born in Australia, New Zealand, or the British Isles.

In the course of an analysis of our population according to race in connection with the Census of 1921, it was ascertained that rather more than 99% of the total population were of European race. In actual numbers there were 5,387,000 of European race; 31,000 non-Europeans of the full blood, or somewhat less than 6 per 1,000 of the total population; and 17,500 half-castes, or somewhat more than 3 per 1,000 of the total population. The full-blood non-Europeans consisted mainly of Chinese, Hindus, Syrians, Japanese, Polynesians, and Malays, the Chinese predominating, and representing about 55% of the full-blood total. The half-castes were mainly half-caste Australian aboriginals, who

represented nearly 66% of the half-caste total, and half-caste Chinese, representing about 21% of the half-caste total. Our Australian community is thus almost wholly of European race.

Coming now to the question of occupation, it is of interest to note over a series of years the continuous change in constitution, the gradual emergence from the status of primary producers. In the development of mankind the earliest forms of occupation were undoubtedly those involving the acquiring direct from nature of the materials necessary for food, clothing and shelter. Such occupations we have still with us, and in the most recent census results for Australia we show the numbers engaged in such avocations as trapping, fishing, forestry, water supply and mining. There has been, no doubt, extensive improvement in the methods employed in these avocations, but the objective is now much the same as then, viz., the direct acquisition of nature's bounty. In a new country such callings naturally occupy a somewhat important position, and with growth of population they gradually retire into a less prominent place. The area required for such occupations is extensive, and the population which they can support is relatively small.

The next important group of occupations in the order of human progress is that which works through the domestication of animals and the control of their products. This is a considerable advance on the mere acquirement of nature's products, since it involves the direction by man of certain of the forces of nature to suit his own requirements. He selects and domesticates appropriate animals, protects them from their natural enemies, attends to their requirements in respect of

food, water and shelter, and improves their qualities by selection and crossing along lines suitable to his own requirements. This is the pastoral state which has a marked counterpart in the pastoral occupations of most new countries. The pastoral state, with its greater provision for the day of need and with its less insistent demands on extensive range of area, enables a greater density of population to be maintained in suitable localities than was possible in the hunting state; but the area required is still great, for the herbage needed is the unaided bounty of nature. In Australia pastoral occupations have played, and are still playing, a great part, but here also pressure of population is making itself felt in the restriction of areas and the conversion of sheep runs into farms. Probably, in view of the increasing value of the wool clip, owing to increasing world-wide demands for the commodity and the difficulties of extending production, there will be a halt in the reduction of sheep areas, but such a pause will be temporary only. If prices remain high, the production of wool will almost certainly develop along different lines and will be associated more closely than at present with the next stage of progress, viz., that of cultivation.

With primitive man the agricultural state followed the pastoral, and the same course is followed in most new countries, Australia being no exception. A feature of this state with primitive man is the relative immobility of the population. In the hunting state there is frequent movement; in the pastoral state movement, although not so great as in the hunting state, was still much in evidence; but with the advent of the agricultural state, movement from place to place is detrimental to development. For success, appropriate areas

must be selected and labour must be employed in clearing and preparing them for the reception of seed and in improving them from season to season in various ways. We are here reaching conditions which make for concentration of population, viz., permanence of abode and limitation of area. In Australia there has been evidence of agriculture since the first settlement in 1788, but, as already mentioned, the big forward movement took place after the subsidence of the gold rush of the fifties.

Following on the agricultural state and often closely associated with it we have the development of the manufacturing industry. The genesis of the industry lies right back in the hunting state, for the making of a net or a bow, the fashioning of a boat or a spear, or the erection of a dwelling is a matter of secondary industry—the germ of our modern manufacturing. Here, again, we have merely the adaptation of nature's materials and the diversion of nature's forces to suit human needs.

Associated with all of these occupations we have the necessity for transport, gradually developing through human bearers of burdens, pack animals, wheeled vehicles drawn by animals, and steam traction onwards to our present motor-propelled traversers of land, sea and air.

Associated also with the various stages of growth there has arisen the practice of exchanging products, and from this has developed the commercial class in the community, becoming more and more specialized as time goes on.

The domestic class is intimately associated with the life of the community, but is not in evidence strongly

in the earlier stages of growth, since the various members of the community then attend largely to their own needs in this respect.

Finally, there is the professional class which, in the earlier communities, was represented by the priest, the medicine man, and the warrior, though all functions were sometimes performed by the same man. With our modern development we have the church, medicine, and the army still in leading professional positions, but associated with them we have the specialized callings of law, architecture, engineering, education, and even amusement.

If I had the time I might review the history of Australia as shown by the recorded development of these various classes in our community, but I do not propose any such task. What I have said in respect of occupations has been with the object of suggesting that the lines on which primitive man developed to the present stage of civilization are, in the main, those on which a new country, such as our own, has developed and is developing. Further, I wish to indicate that this collection of people which makes up the population of Australia is not a mere heap of heterogeneous material shot on a dump in the Western Pacific, but is rather a more or less delicately organized piece of mechanism which is capable of great things if due attention is paid to the appropriate balance of its parts, but which may be thrown seriously out of gear by any dislocation of its regular action. More fittingly, perhaps, the community may be said to be a living organism continuously growing and adapting itself to its environment, the human units corresponding to the cells of which the microscopists tell us that living bodies are composed.

How great an injury may be done to such an organism by a dislocation in its normal functioning is shown in our own case by the upsettall due to the war, and by the immense efforts which have had to be put forward to bring about such an apparently natural process as the reabsorption of our own soldiers who returned from the war in 1919 and previous years. As an organism we can satisfactorily grow only by absorption, not by mere accretion, and in any measure taken to stimulate growth much more attention needs to be devoted to the nature of this wonderful organism than is usually paid by those whose main advice is to "get large quick." As I have said before, those responsible for our rate of growth need to work with one eye on our future prospects and the other on our past experience.

I am afraid that I have digressed somewhat. I was dealing with the make-up of our breadwinning population, and wished, before closing that side of my paper, to give a few examples of our present trend as indicated by the censuses taken during the present century. Let us return, therefore, to this matter and take first the primary producers. These represented 325 per 1,000 breadwinners in 1901, declining to 299 per 1,000 in 1911, and 258 per 1,000 in 1921. Those branches of primary production engaged in the acquisition of nature's products direct, declined from 89 per 1,000 of breadwinners in 1901 to 51 in 1921; pastoral pursuits from 68 per 1,000 in 1901 to 61 in 1921; and agriculture from 169 per 1,000 in 1901 to 146 in 1921. On the other hand, manufacturing increased from 163 per 1,000 in 1901 to 191 in 1921; transport from 75 per 1,000 in 1901 to 90 in 1921; commercial pursuits from 136 per 1,000 in 1901 to 153 in 1921; and profes-

sional callings from 68 per 1,000 in 1901 to 87 in 1921. Domestic occupations, however, declined from 123 per 1,000 in 1901 to 91 in 1921. These changes from primary production to secondary production and to such pursuits as those associated with transport, commerce, and professional callings are considered by some critics as evidence of decline, but from what I have previously said it is evident that the change is along natural lines. Further, there is no justification whatever for regarding these occupations which are on the increase as unproductive. Let us ask the question: "What is production?" A standard definition of productive labour is that it is that labour which creates utilities fixed and embodied in material objects. But this definition requires amendment. Surely, for example, the work of the teacher which fixes and embodies utilities in human beings is productive in a high degree, although according to the usual definition it would be classed as unproductive? In my opinion the only test of production is the rendering of service to the community, and the worker who does this is no parasite whatever his calling. Further, it may be said no one can do more than this. No one can produce anything but services or disservices. The farmer who cultivates the soil is not a creator but merely a mover of materials, a renderer of services; all the creation that is done is the work of nature. The farmer is only one of the long chain of movers operating between nature and the consumer, and because he is the nearest to nature we endow him in imagination with the qualities which nature possesses. The farmer utilizes the forces of nature, but so also does the transporter, the miller, the baker, and even the bread carter. Sometimes at a

fire two rows of workers are established. Along one row there pass to the fire buckets filled with water. Along the other the empties are returned to the well, where one man dips. Why should the man who dips be regarded as the only one really engaged in extinguishing the blaze? From the point of view of immediate effect the man at the other end of the chain is more effective. But why distinguish? Where all are essential, can one be more essential than another? All are equally engaged in putting out the fire. Similarly, in the chain of service renderers between nature and the consumer, all are producers of the only things that humanity can produce, viz., services.

VII.

Another phase of the population which has attracted attention all over the world and very much attention in Australia has been the relative growth of cities. At the meeting of the Australasian Association for the Advancement of Science, held in August, 1924, in Adelaide, a valuable paper on this phase was contributed by Mr. E. T. McPhee, Supervisor of Census in the Commonwealth Bureau of Census and Statistics. This paper will be published in full in the volume of transactions of the Association. I may say, however, in passing that Mr. McPhee there indicates that the tendency to relative urbanization is quite a natural process, and from many points of view not an undesirable one. Here, as in so many other matters, it is necessary to analyse the facts and not to adopt some catch phrase, such as "Back to the land." We must all go "back to the land" sooner or later, but it may possibly be wiser

for the time being to leave much of the land for wool-growing or forestry.

Another matter to which I wish to call your attention very briefly is that of the increasing longevity of our Australian population. At the meeting of the Australasian Association to which I have just referred, I read a paper in which I described a new Australian life table that I had recently compiled for the triennium 1920-1922. This table shows a marked improvement in the expectation of life of the Australian population in continuation of the very extensive improvement shown from period to period in earlier tables. I will not quote extensive details, but may say that the table for 1881-1890 gave the average length of male Australian life as 47.2 years, compared with 59.2 years for the latest results, while in the case of females the corresponding increase in the length of life was from 50.8 years in the earlier to 63.3 years in the later table. In brief, there has been in 35½ years an increase of 12 years in the average length of male life and 12½ years in the average length of female life—an increase of some 25% in each case. Taking these results in conjunction with the increased relative urbanization of population just mentioned, it may be said that the drift to the cities in Australia has not produced any evidence of depreciation in the progressive longevity of the population.

I am afraid that I have been somewhat discursive, but I have dealt with some phases of a subject in which I have had years of experience and in which I take a live interest, not only as a statistician and an actuary, but also as a citizen. We are a young community situated far from our kindred. We are a small community, but not nearly so small as many imagine.

In the days of Queen Bess the population of England numbered only $2\frac{1}{2}$ millions, yet Drake defeated the Armada. When the United States of America decided to start business on its own account it had a population of less than four millions, *i.e.*, less than two-thirds of our own numbers. We are not growing slowly, notwithstanding comments to the contrary, for there is no country in the world that shows a more rapid rate of present increase, and not one, with the exception of our sister Dominion, New Zealand, that shows a more rapid rate of growth over the last forty years. We have a degree of vitality as shown by our life table results that compares more than favourably with the best in the world. True, we have droughts and we have deserts, but so have other parts of the world. True, we have an empty north, but so has Canada; so, for that matter, has Asia, where the southern half contains nearly 97% of the total population. But I am not attempting propaganda. I have neither the qualifications nor the desire for such a task. I am merely the recorder of facts.

For I have neither wit, nor words, nor worth,
Action, nor utterance, nor the power of speech
To stir men's blood: I only speak right on:
I tell you that, which you yourselves do know.

CHAPTER III.

AUSTRALIAN IMMIGRATION POLICY.

By A. H. Charteris, Challis Professor of International Law in the University of Sydney.

Introductory.

Like other countries bordering the Pacific and inhabited by the White race, Australia, in the economic and racial interests of her population, has for many years maintained the policy of restricting—indeed, of suppressing—the immigration of coloured labourers and artisans, though not of coloured merchants, students and tourists who may wish to visit the continent.

Applied to an area approximately equal to that of the United States,¹ by a population of a little over six millions,² this restrictive policy, which would excite no comment if confined to, say, the island of Tasmania, calls for explanation in view of the growing international importance of migration problems. The purpose of the present paper is to give an account of the general immigration policy, of which the “White Australia” policy is but the negative aspect, indicating, on the one hand, the origin and method of enforcement of Asiatic exclusion, as well as the national reasons there-

1. 2,974,581 square miles.

2. As at December 31, 1926, 6,110,514, being an increase of 118,430 during the preceding 12 months, the average rate of annual increase being slightly more than 2 per cent.

According to the Census of 1921, the total foreign population of Australia was 45,754, including among full-blood non-Europeans 28,087 Asiatics, of whom 17,157 were Chinese, 2881 Hindus, 2740 Japanese, and 1087 Malays. (*Commonwealth Year Book*, 1926, p. 881).

for, and, on the other, recent governmental efforts to stimulate and prepare for the flow of migrants from Great Britain to Australia.

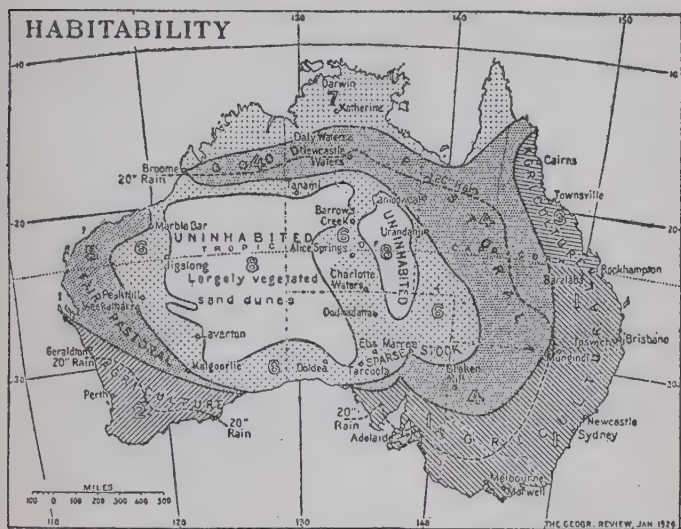


FIG. 1. A generalised habitability map of Australia. The numbers show approximate values of land in descending order from 1 to 8. There are few sheep or cattle in 6 & 7, and none in 8. (From *Geographical Review*, Jan., 1926.)

The reproach of extending the policy of exclusion over an area unreasonably large loses most of its force in the light of well-established facts. Vast as the area of Australia is, both her "open spaces" and her "limitless possibilities" greatly shrink for the student of settlement, who realises that of this area³ not less than one million square miles, or 34 per cent., is in the geographer's sense "desert," i.e., "good pastoral lands

3. The maps were prepared by Professor Griffith Taylor, of Sydney University, for his paper on the *Resources of Australia*.

but useless for agriculture," while the area fairly suitable, in point of climate, for agriculture is 24 per cent., 716,000 square miles, of which about one-quarter is too

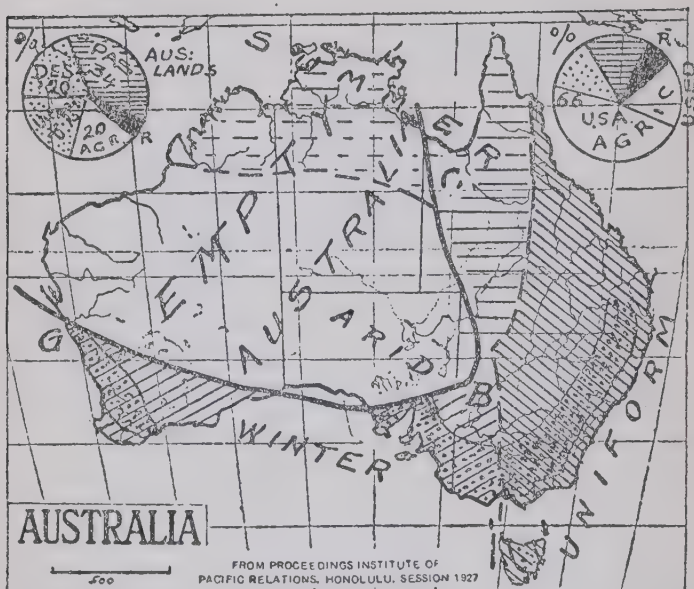


FIG. 2. Empty and occupied Australia, separated by a line passing near Geraldton (G.), Broken Hill (B.), and Camooweal (C.). Only about 20,000 people out of six million live in the north-west half. Rain regions are indicated in general fashion. Wheat belt shown by dots. In the circular diagrams Desert, Pasture, Rugged and Agricultural lands are compared.

rugged for close settlement. The area actually under agriculture, however, is only 17 million acres, or about 26,000 square miles. The comparison so often made with roughly corresponding area of the United States is extremely misleading, as the diagrams in the upper part of Fig. 2 more plainly show.

Nor relatively to area available for human settlement

does the present Australian population of just over six millions fall unreasonably short of the maximum which is estimated to be possible without lowering the present standard of living. Two distinguished geographers, Australian and American, agree in estimating this maximum at 20 millions. Professor Griffith Taylor, whose classification of Australian lands is summarised above,⁴ estimates the capacity of Australia to support population at 9 per cent. of the population of the United States and Canada, *i.e.*, about 10 or 11 millions under present conditions, and about 20 millions if the United States approaches its possible maximum of 200 millions. By the different method of estimating the capacity of the Australian area if utilised as fully as the corresponding areas of the United States, Professor Ellsworth Huntington, of Yale, considers that the Australian maximum is not likely to go much beyond 20 millions "unless some new and unsuspected discoveries are made or the standards of living are materially lowered."⁵

It is only fair to mention that this estimate is not universally accepted. Statisticians who regard food-production as the controlling factor in capacity of a country to carry population, point out that in the six years 1916-1921 the food production in Australia sufficed to maintain nine millions of people in Australia and foreign countries, all of whom could have been employed in Australia had her natural resources been sufficiently developed. As her resources in coal alone are nearly as great as those of the United Kingdom and much more accessible owing to greater width of seam, statisticians are not disposed to accept so low a limit as

4. *Geographical Review*, Vol. X, XII, 1922, pp. 375-402.

5. See *West of the Pacific*, 1925, pp. 392-7.

20 millions for her potential employable population. Her food resources they regard as capable of the requisite expansion. (Cf. *The National Diet*, by D. T. Sawkins, M.A., F.S.S., Statistician to N.S.W. Board of Trade. Government Printer, Sydney, 1922.) This argument is strongly used by those who see in the development of secondary production the main means of increasing rapidly the population of Australia.

Again, density of population, which for the whole of Australia is but 2.02 per square mile—the lowest recorded for any country—is no index to the effective economic use of which the utilisable two-thirds of this area is capable. Of the most remunerative of these uses, relative density of population is neither a condition nor a likely result. Under Australian conditions, the growing of wheat which is possible over wide tracts, or of wool, which is possible in some 200,000 square miles, requires a minimum of human labour and is seldom the cause of closer settlement. In view of present high prices of wool there is even warrant for growing wool on land which is suitable for growing wheat.

Moreover, as was pointed out by an able Australian writer some years ago, it is open to doubt whether the remarkable development of Australia from what was a desert before the arrival of the white race in 1788 to its position as source of wool, wheat, and meat for the peoples of Europe, would have been greatly accelerated by "quantities of cheap Asiatic labour."⁶

These considerations are submitted as relevant to the criticism that the disparity of area and population creates for Australia a problem which her restrictive immigration policy tends to intensify.

6. See *The Round Table*, No. 42, March, 1921, pp. 312, 214-5. Primarily intended to demonstrate that the national policy of Australia is a vital interest of the British Empire, this article is the ablest recent statement of the case for "White Australia."

NEGATIVE ASPECT—ASIATIC EXCLUSION.

HISTORICAL.

The negative aspect of Australian immigration policy is to be explained by the origin and course of Australian colonisation. This began as a governmental process in 1788, and may itself be said to be a direct consequence of the American War of Independence, which interrupted, and finally put an end to, the transportation of convicts from Great Britain to the American Colonies. In 1788, then, the British Government established a penal settlement at Sydney Cove, near Botany Bay, which Captain Cook, coming from the eastward, had discovered in 1770. From the first the white population thus introduced into Australia has consisted, with few exceptions, of men of one race. Great Britain was the source not only of the convicts but also of the free settlers, whose numbers in New South Wales and in other later settlements were increased after the Peace of 1815 by ex-officers, as they would now be termed, of the British army and navy.⁷

With Eastern countries there was in the early days little intercourse except for sporadic attempts by pastoralists (or ranchers) to recruit Asiatic labour under indenture.

The first great increase of population followed the

7. New settlements were made in Van Diemen's Land (Tasmania) in 1803, King George's Sound (Adelaide) in 1827, and at Swan River (Western Australia) in 1829, British authority being extended over the whole of Australia for the first time in that year. The Colony of South Australia was founded in 1834 at the instance of Edward Gibbon Wakefield, who obtained Parliamentary sanction for carrying out his scheme of scientific colonisation. Victoria and Queensland were out-settlements from New South Wales, from which they were separated in 1850 and 1859 respectively. The six colonies were federated in 1900 in virtue of the *Commonwealth of Australia Constitution Act* of the Imperial Parliament (63 and 64 Vic. c. 12). The opening of the Federal Parliament at Canberra, the Federal capital, by H.R.H. The Duke of York took place on May 11, 1927.

discovery of gold⁸ in New South Wales and Victoria in 1851, which added half a million inhabitants during the period 1852-1862. Among the newcomers were many Chinese, whose presence in the goldfields in competition with Europeans speedily caused race friction, which did not stop short of organised attempts to drive the Asiatics off the fields by force. To meet this new social evil three of the Australian States—Victoria, South Australia, and New South Wales—in succession passed measures in 1855, 1858, 1861 respectively restricting the immigration of Chinese and increasing the taxation on those already in the country in order to provide for the increased protection which they required. The methods adopted were to limit the permissible number of immigrants to one for every ten tons of the carrying ship's burden, and the imposition of a poll tax of £10. When the number of Chinese in Australia declined with the fall in yield from the gold fields, these temporary measures were repealed by South Australia in 1861, by Victoria in 1865, and by New South Wales in 1867. But the problem of Chinese immigration recurred in 1875 with the discovery of important gold mines in Queensland, where it was dealt with by the legislature in 1875 on the Victorian precedent of 1855.

If resistance to the presence of Chinese in Australia had originated with European miners, public opinion began in the seventies to harden against Asiatics under the growing influence of trade unions, which, in order to maintain the standard of living, consistently opposed both indentured labour (as practised in Queensland)

8. Of alluvial gold at Lewis Pond's Creek, N.S.W., on February 12, 1851, and at Anderson's Creek, near Melbourne, Victoria, in August, 1851.

and the free admission of Asiatics. Apprehension as to the effect on Australia of the agitation for the exclusion of Chinese from the Pacific Coast, culminating in the Chinese Exclusion Act of 1882, led to a revival of anti-Chinese legislation in all the Australian States. By 1887 all of them had fallen into line, imposing, as in the sixties a poll tax of £10 and limiting the number of immigrants by the tonnage of the carrying vessel. International as well as inter-Empire complications ensued. When news arrived that the Chinese Minister in London had made representations against this legislation on the ground of conflict with the Treaty of Peking, 1860, large numbers of Chinese were said to be on their way to the Northern Territory, attracted by reports of new ruby mines. Australian public opinion took fright, and compelled first the Victorian and then the New South Wales Executive to act drastically. The master of a British vessel, *The Afghan*, which put into Melbourne in May carrying Chinese passengers in excess of the number permitted by the local statute, was allowed the alternative of landing his passengers under heavy fine or taking them to sea again. He chose the latter alternative and made for Sydney, where another vessel, also carrying Chinese in excess of its legal quota, was already in harbour.

By executive act the Premier refused the immigrants permission to land excepting those holding naturalisation papers showing previous domicile. A writ of *habeas corpus* was obtained, and the Supreme Court of New South Wales found them entitled to land and refused leave to appeal to the Privy Council. In Victoria, however, legal proceedings in somewhat similar circumstances led to the well-known decision of the Privy Coun-

cil in *Musgrove v. Chun Teong Toy*,⁹ in which it was held that an alien has no legal rights enforceable by action to enter British territory. This decision sufficed to make the existing restriction acts thoroughly effective as regards Chinese.

It was inter-Imperial complications which led to Australian adoption of the dictation test at the instance of the Imperial authorities in 1897. With British India as well as Japan complications had threatened to attend the endeavour of three of the Australian Colonies in 1890 to apply to all Asiatics the provisions of the Chinese exclusion acts; they were avoided by the vigorous intervention of Mr. Joseph Chamberlain, as Secretary of State for the Colonies, at the Colonial Conference in London in the following year. The presence in Australia of Asiatics other than Chinese—notably of British Indians, numbering 1,800 out of some 2,500 non-Chinese Asiatics—had begun to attract attention shortly before the Intercolonial Conference of Premiers met in Sydney in 1896 to consider whether the Colonies should seek adherence to the recent Anglo-Japanese treaty of commerce and navigation of 1884.¹⁰ Probably scenting danger in the Japanese victory over China in the war of 1894, the Conference decided to take no action in regard to the treaty, as adherence would give

9. L. R. 1891, A. C. 272 (cf. 1 Pitt Cobbett: *Leading Cases on International Law*, 204, Scott's *Cases on International Law*). Musgrove, the Collector of Customs of Victoria, was sued by Chun Teong Toy, a Chinese immigrant, for having prevented the latter from landing, this having been done under executive order of the Government of the Colony of Victoria. On complainant's behalf it was contended that his exclusion was illegal, both on a proper construction of the Chinese Exclusion Acts in force in that colony and at common law. The Supreme Court of Victoria found in complainant's favour. The Privy Council, on appeal, after reversing the judgment on the question of interpretation of the statutes, further held that an alien has under the general law no legal right, enforceable by action, to enter British territory.

10. See 19, *Hertslet's Commercial Treaties*, 691.

the right of entry to Japanese, and, in view of the presence of British Indians, to extend to all Asiatics the provisions of the Chinese exclusion acts which specified race or colour. Queensland alone dissented (Japanese labourers having recently been imported by the sugar planters in North Queensland), and in 1897 became a party to the treaty¹¹ under a provision which reserved to the colony the right to restrict the immigration of artisans and labourers. Shortly afterwards Queensland, to ensure that labourers and artisans should not come into that State, made an agreement with Japan which is of particular interest as the forerunner of the "Gentlemen's Agreements" with the Commonwealth,¹² Canada, and with the United States of 1907.

Bills on the lines agreed on were at once introduced in New South Wales, Tasmania, and New Zealand, but to all of them the Royal Assent was reserved in view of the double danger of offending British Indian sentiment and of injuring good relations with Japan (which were to ripen into the Anglo-Japanese Alliance of 1902). The Japanese Government, moreover, had strongly protested against the bills in question, and had declared itself ready to negotiate a treaty restriction of Japanese immigration into colonies on the model of the arrangement with Queensland.

At the Colonial Conference¹³ in London in the following year Mr. Chamberlain expounded to the

11. See *op. cit.* p. 699. Queensland made an agreement with Japan to regulate the immigration of Japanese, which became binding on the Commonwealth and remained in force until 1902. The Anglo-Japanese treaty of 1894 was denounced by Japan in 1910.

12. See below.

13. These Conferences, the first of which was held in London in 1887, changed their name from "Colonial" to "Imperial" Conferences in 1911. They are held at intervals of three years, the last being the Conference of October-November, 1926. [See *International Conciliation*, No. 228, March, 1927.]

assembled Premiers both sets of objections to the bills, and this with unusual frankness and vigour.¹⁴ He expressed the sympathy of the British Government

“with the determination of the White inhabitants of these colonies, who are in comparatively close proximity to millions and hundreds of millions of Asiatics, that there shall not be an influx of people, alien in civilisation, alien in religion, in customs—whose influx, moreover, would most seriously interfere with the legitimate rights of the existing labour population.”¹⁵

But he invited the Colonial Premiers to consider whether they could not achieve their purpose by a method less objectionable than the exclusion of immigrants on the ground of colour or race. In order to spare the susceptibilities of the 300 million Indian subjects of the Crown, as well as of foreign Asiatics, he urged the Premiers to adopt the principle of the recent Natal Act No. 1 of 1897, which, in addition to prohibiting certain specified classes of immigrant (paupers, idiots, diseased persons, prostitutes, and criminals) declared generally that any person who, when asked to do so, failed to write out and sign in a European language an application for admission on a prescribed form set out in a schedule to the Act was to be deemed to be a prohibited immigrant.

The Royal Assent had been given to the Natal Act, and New South Wales, Western Australia, and Tasmania readily adopted this non-discriminatory model, the more so as it was acceptable to the Japanese Government.

14. See Keith's *Responsible Government in Dominions*, Vol. 2, p. 1080.

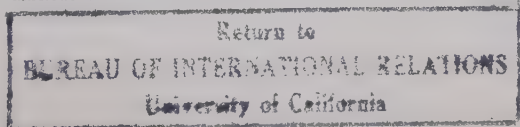
15. See Keith: *op. cit.* p. 1081.

After the Federation of the Australian Colonies in 1900, the method of exclusion to be adopted came before the first Federal Parliament, which had approved by a large majority the general principle of Asiatic exclusion. The British Government, having renewed its representations, the Parliament, after much controversy, adopted the language test, but in order to avoid the risk of evasion of the test as applied in Natal (*e.g.*, through the production of a forged application) the language test was couched in the form of a dictation test. The *Federal Immigration Restriction Act* 1901 (No. 17) accordingly prohibits the entry into Australia of (*inter alios*) any person who, when asked to do so, fails to write out on dictation and *in the presence of an officer* a passage of 50 words in length in a European language.

In view of representations by the Japanese Government that an education test in any European language was in effect discriminatory against Japanese, who were thus placed in a position of inferiority, par. (a) of s. 3 was amended in 1905¹⁶ to read:

Any person who fails to pass the dictation test: that is to say who, when an officer or person duly authorised in writing by an officer, dictates to him not less than fifty words in any *prescribed* language, fails to write them out in that language in the presence of that officer or authorised person.

16. By the *Immigration Restriction (Amendment) Act* 1905 s. 4, which further provided that no regulation prescribing any language or languages should have any force until it had been laid before both Houses of Parliament, and, before or after the expiration of such thirty days, both Houses of Parliament, by a resolution, of which notice has been given, had agreed to such regulation. Section 5, moreover, provided that until a regulation prescribing any language or languages under Sec. 3 of the Principal Act, as amended in the Act of 1905, should come into force, any language authorised by this said Sec. 3 before the commencement of the Amending Act should be deemed to be a prescribed language within the meaning of that section as amended.



No regulation prescribing any language or languages were issued under the Amending Act, and the provisions of the original Act remained *de facto* in force. The reason for non-user of the new powers appears to have been that the objection of the Japanese Government had been met by an informal arrangement made with the Australian Government in 1904, whereby *bona fide* students, merchants (engaged in oversea trade), and visitors from Japan were permitted to enter the Commonwealth for a stay of 12 months without liability to the dictation test on passports issued by the Japanese authorities and viséed by the British Consul at the port of embarkation. As from April, 1919, the permit may be extended beyond 12 months on application for a certificate of exemption. A similar arrangement was made in the same year with the Indian Government, permitting Indians of the specified classes to enter and remain indefinitely so long as they retained their original status. The Amending Act of 1905 legalised these arrangements in their original form and authorised the conclusion of others of the same nature (s. 8). Special arrangements made in 1912, and modified in 1920, regulate in the same manner the admission and sojourn of Chinese students, merchants, and tourists. Similar arrangements, moreover, apply to individuals of the specified classes from the British possessions of Ceylon, Burma, Hong Kong, and Straits Settlements, as well as from Annam, Egypt, the Philippine and Hawaiian Islands.¹⁷ Their importance lies, of course, in the fact

17. For further details see Mr. E. L. Piesse's article: "Australia and Japan," in *Foreign Affairs* (New York), 1926, p. 475, where the genesis, dates, and other particulars of these arrangements are, it is believed, published for the first time. Their existence appears to have been unknown to Professor A. T. Toynbee, whose admirable article on "Asiatic Migration" in *Survey of Foreign Affairs*, 1924 (Oxford, 1926) does not allude to them.

that though terminable without notice, these arrangements signify the acquiescence, during their currency, of the foreign governments concerned in the application of the dictation test to all persons not falling within any of the exempted classes.

While the unconcealed aim of the Australian Parliament was the exclusion of Asiatic labourers, it must be emphasised that the indirect method of achieving this result had been forced upon an unwilling Parliament by the British Government for diplomatic reasons in order to avoid hurting the feelings of friendly nations. By many in Australia the device was denounced as an immoral subterfuge. Nevertheless the statute, while entirely non-discriminatory in form, offered the great advantage of a flexible test, which could be applied to secure exclusion in any given case, since it is not difficult in practice to discover from a suspected migrant the languages which he knows, and to apply the dictation test in one which he is certain not to understand. Difficulty has occasionally arisen in regard to undesirables of unusual linguistic attainments. In one such recent case concerning an international rogue recourse was had to Gaelic, which the Court of New South Wales confidently held to be a European language within the meaning of the Act.¹⁸ In official practice a European language means a living European language.¹⁹

It should be added that under the Immigration Act 1901-25, Sec. 4B, any person who has resided in Australia for a period or periods in the aggregate of not

18. *The Sun* Newspaper, Sydney, August 23, 1921.

19. It may be mentioned here that in the year 1926, the number of persons excluded from Australia under the dictation test was only 34. This comprises 4 British subjects, 22 Chinese, 7 Papuans, and 1 Hawaiian. The inference is that the test operates as a "stand-off signal" and that occasion for its use is infrequent.

less than five years, and is about to leave the Commonwealth, may apply for the issue of a certificate which, if issued, will exempt him from the dictation test on his return, provided that this occurs within the specified period and that he produces and delivers the certificate to an officer. In 1925 2,538 Asiatics were admitted to the Commonwealth without the dictation test, being exempted either under these certificates or the agreements above mentioned.

Until 1925 the only departure made by the Australian Parliament from the non-discriminatory (or anonymous) method of immigration restriction was to be found in a post-war measure of exclusion of ex-enemy aliens, which was embodied in the *Immigration Restriction (Amendment) Act* 1919. This Act provided that from December 2, 1920, and thereafter until the Governor-General by proclamation otherwise determined, the term "prohibited immigrant" included any person who, in the opinion of an immigration officer, was of German, Austro-German, Bulgarian, or Hungarian parentage and nationality or was a Turk of Ottoman race.²⁰ Except as regards Turks of Ottoman race, the ban on the immigration of ex-enemy aliens was raised as from December 2, 1925.²¹

Later in the same year, however, an important innovation on the Commonwealth's traditional policy of re-

20. *Seemle*, under the double test of parentage and nationality a natural-born British subject of British parentage who had acquired ex-enemy nationality by naturalisation or marriage would not be a "prohibited immigrant" within the meaning of this section. British-born women who had become nationals of any of the first four ex-enemy States by marriage were, doubtless, primarily in contemplation of the legislature.

21. By proclamation of the Governor-General of December 3, 1925, providing that the provisions of Section 3 of *Immigration Act* 1901-25 were declared *not* to apply to persons of German, Austro-German, Bulgarian, or Hungarian parentage and nationality on and after December 2, 1925 (*Commonwealth Gazette*, No. 103, of December 3, 1925).

fraining from specifically excluding individuals of a named race or nationality was unobtrusively made in the *Immigration (Amendment) Act* 1925. In view of the considerable increase in the number of immigrants from countries in South-eastern Europe, which had immediately followed the entry into force of the United States' Immigration Act of July 1, 1924, clamour for increased restriction had arisen in the Australian press and Parliament. The Government was urged to adopt on the United States' model a *quota* system, designed to prevent what was somewhat extravagantly described as the "influx" of undesirables. The Government rejected these proposals on the double ground of the expense involved in establishing an immigration service for the Commonwealth in Europe and of the impolicy of giving possible ground of offence to foreign States. Nevertheless the latter objection applies to one at least of the three statutory grounds of exclusion which Parliament in fact adopted, with the omission of certain important qualifying words, from the Canadian *Immigration Act* 1919.

Sec. 3 of the Amending Act of 1925 adds the following provision to the *Immigration Act* 1901-24:

3K (1) The Governor-General may by proclamation prohibit, either wholly or in excess of specified numerical limits, and either permanently or for a specified period, the immigration into the Commonwealth or the landing at any specified port or place in the Commonwealth, of aliens of any specified nationality, race, class, or occupation, in any case where he deems it desirable to do so—

- (a) On account of the economic, industrial, or other conditions existing in the Commonwealth;
 - (b) Because the persons specified in the proclamation are in his opinion unsuitable for admission into the Commonwealth; or
 - (c) Because they are deemed unlikely to become readily assimilated or to assume the duties and responsibilities of Australian citizenship within a reasonable time after their entry.
- (2) Any person who enters the Commonwealth in contravention of the prohibition contained.

The powers conferred by this Act have not so far been exercised. The three statutory grounds are, of course, additional to the existing grounds of exclusion, from which they differ in not relating to the personal qualities or attainments of the individual immigrant. Ground (a) is unobjectionable, relating as it does to the internal conditions of Australia. Grounds (b) and (c), however, may well cause international unpleasantness, if cited in their statutory baldness as justifying the exclusion of persons of a specified nationality or race. Doubtless the sting may be taken out of a possible affront by the addition of qualifying words like those in the Canadian statute.²²

22. The *Canadian Immigration Act* 1919 (9 & 10) Geo. V. c. 25 by s. 13 repeals paragraph (c) of s. 38 of the *Canadian Immigration Act* 1910 and substitutes a paragraph on which the Australian provision is modelled (with better draftsmanship). The Canadian ground of "unsuitableness" (corresponding to (b) in the Australian Act) is qualified by the words: "having regard to the climatic, industrial, social, educational, labour, and other conditions or requirements of Canada" (omitted from the Australian Act) and the ground of "undesirability" is qualified by the words (also omitted in the latter): "owing to their peculiar customs, habits, modes of life, and methods of holding property." The persons against whom the latter provision was aimed are understood to have been certain sects of peculiar people of the Doukebor, Hutterite, and Mennonite class, who had already given trouble in Canada by segregating themselves in prairie communities and holding themselves aloof from everything Canadian—even rates and taxes. By Order in Council made after the passing of the Act, persons of these three classes were denied admission to Canada.

Meanwhile, and independently of these statutory powers, the Australian Government, in order to prevent an undue influx of immigrants excluded from the United States by operation of United States' Immigration Act of July 1, 1924, effected, through the British diplomatic agents, arrangements with the Governments of Italy, Greece, Jugo-Slavia, and Albania and other countries in South-eastern Europe for limiting the number of passports to be issued in such countries with visa entitling the holders to travel to Australia. By Regulation of December, 1924, the immigration of British subjects being Maltese is limited to 20 per month for each of the six Australian States, or 1,440 per annum; and of Jugo-Slavians, Greeks, and Albanians to 100 per month for each nationality. The arrangement with the Italian Government is that the latter undertakes not to issue passports with visa for travel to Australia except to migrants who can show that they possess at least £40 or its equivalent, or that some resident in Australia will be responsible for them on arrival. By these means a sensible diminution in alien European immigration to Australia has been effected.²³

POLITICAL AND SOCIAL.

While the reasons advanced for Australian immigration restriction have been varied in form from time to

23. For the period 1922-26 the admission of Europeans without the dictation test was as follows:—

	1922.	1923.	1924.	1925.	1926.
British	84,263	85,440	88,335	82,662	90,562
Italians	3,367	1,739	4,540	6,102	3,952
Greeks	472	922	2,028	645	683
Other Europeans	339	587	2,735	1,397	8,356

(See *Quarterly Summary of Australian Statistics*, Bulletin No. 106, December, 1926.)

time,²⁴ there has been no change in the fundamental political reason. Apart from all questions of relative merits of competing civilisations, which are no longer stressed, the political difficulty for a white democracy of accommodating an alien race within its body without damage to democratic institutions has never been absent from Australian political thinking. Nor has it ever been more powerfully urged than in the eighties by Mr. (afterwards Sir) Samuel Griffith when dealing, in a despatch to the Governor for transmission to London, with the special case of coolie labour under indenture. Discounting certain allusions to "inferior" and "superior" races, Australian opinion, it is conceived, would now approve as still valid the part of his argument which is summarised as follows in this now little known despatch:²⁵

(1) It is undesirable to introduce into a white democracy an alien race under conditions denying to it any share of political power and requiring protection by a paternal Government.

(2) It is undesirable to permit free economic competition between Asiatics and Europeans since it invariably degrades manual labour in the eyes of the latter.²⁶

24. See in particular "White Australia" in *The Round Table*, No. 106, March, 1921, pp. 312-338 (the ablest argument for the policy as a vital interest of the British Empire); "The White Australia Policy," by "Sydney," in *Foreign Affairs* (New York), Vol. 4, p. 97 (1925); "Australia and Japan," by E. L. Piesse, *op. cit.*, p. 475. For a fuller sympathetic discussion by non-Australians, see Professor J. W. Gregory's *The Menace of Colour* (1925), Chaps. VII-IX, and Professor Ellsworth Huntington's *West of the Pacific*, Chaps. XIV-XIX.

25. See "Correspondence on the subject of *Separation of the Northern Portion of Queensland*, ordered by Legislative Assembly of Queensland to be printed, October 23, 1885." (Catalogue number in Mitchell Library, Sydney: Q. 342.94.Q.)

26. This proposition seems now to require modification in view of South African experience. It is not so much that manual labour is degraded in the eyes of Europeans as that Europeans cannot undertake manual labour except at the wages of coloured labour, which are insufficient to support the Europeans' standard of living. Two standards of living are thus created, with an intervening gap which may, of course, be bridged by individual rises from the lower and falls from the higher.

(3) If coloured labour were necessary in Australia (which he was not prepared to admit) the only practical course was to assign separate areas in which coolies might be admitted, "but with the full understanding that as to them the hope of civilisation on the European model is abandoned."

(4) The administration of such areas ought, he urged, not to be entrusted either (a) to a representative government, in which (as in 1885) the interests of employers predominated, and which, in his opinion, was unfit to control "inferior" races, or (b) to a constitutional government representing the whole white population, since this was "not the best to control the destinies of an alien race entering into competition with them in various forms of industry."

(5) But only if clearly unfit for European settlement should such areas in Australia be thrown open to Asiatic immigration, and then only when "constituted as a separate territory governed as a Crown Colony by Imperial officers, who will act with impartial justice between inferior and superior races."²⁷ Difficult as the problem of determining such areas under these conditions would be, it would be as nothing compared to the social and political troubles inevitably involved in any attempt to unite the Asiatic and European civilisations in a constitutional colony.

(6) Finally, the long view, which has always appealed to Australian opinion, was stated thus:

The permanent advantages that would result to Australia and the Empire at large from preserving Queensland as a future field for European settle-

27. A similar proposal was recently made for the development of the Northern Territory of Australia without receiving public support.

ment appear to me so greatly to outweigh the present gain that would ensue to a few persons—of much enterprise, no doubt, but who have no intention of making Queensland their home, regarding it rather as a field for exploitation—that until the experiment of European Settlement has been tried and failed, I hold that it would be a most fatal mistake to adopt the opposite policy, the consequences of which would be probably irreparable.

The European experiment has since been tried and has not failed. But the price has proved high.²⁸

Among the Australian public support for the continued exclusion of non-European labourers seems nowadays to rest upon the following considerations:—

(1) Once admitted to residence in Australia the claim of such persons to the franchise could not be denied in a democratically governed country. But the grant of the franchise would introduce into Australian politics a factor which, it is conceived, might prove incalculable. It might well threaten from within the elaborate structure of compulsory regulation of wages and working

28. In a vigorous reply, which demolished many of Mr. Griffith's "facts," the planters denounced his proposed experiment of growing sugar in tropical Queensland as impossible. Yet eventually the use of coloured labour in the cane fields ceased in 1906, and by dint of a heavy duty on foreign sugar and a bounty on sugar grown in Australia by white labour only, it proved possible for Queensland to grow by white labour all the sugar needed in the Commonwealth. The bounty, which amounted to £1,060,681 between 1902-9, was discontinued in 1913. By 1920-1 the acreage under cane cultivation stood at 162,619, the production of canes at T. 1,339,455 and of sugar at T. 167,401. The corresponding figures in 1901 were 108,535 acres, 848,328 tons and 92,554 tons respectively.

At the last half-yearly meeting of the Colonial Sugar Refining Company Limited the estimated Australian production of sugar was stated to be 452,000 tons, "of which about 125,000 tons will have to be sold in other markets."

For details of the abolition of coloured labour, reference is made to Miss M. Willard's *History of the White Australia Policy*, p. 136 onwards, and of the subsequent sugar industry in Queensland to Professor J. W. Gregory's *The Menace of Colour* (1925), pp. 216-24. The latter topic is referred to in Professor Ellsworth Huntington's *West of the Pacific*, 1925,

conditions in primary and secondary industries alike, which organised labour has succeeded by political action in building up in the lee of a high protective tariff. Tariff and industrial legislation in combination have brought about a high wage for unskilled labour and working conditions for labour in general which are much in advance of the wages and conditions prevailing until recently in Europe or North America, and are remarkable in a young country so new to industrial life. Maintenance of the high standard of living thus created would, it is conceived, be rendered precarious by the admission of any considerable numbers of non-European aliens, and this, too, notwithstanding the natural desire of newcomers to share in Australian advantages. For organised labour in Australia has found its path smoothed by the homogeneity of the predominantly British stock, which has greatly facilitated organisation.

(2) To admit under condition of indenture a selected non-European stock, even of British nationality—*e.g.*, British West Indian negroes, as the late Lord Leverhulme some years ago advocated, for the development of the cotton industry in the Northern Territory—would but increase the political difficulty of defending the exclusion of other non-European races under any conditions. And this quite apart from the objections to indentured labour, which from previous experience Australia holds to be decisive.

(3) The drift to the towns would be not less among non-Europeans than among Europeans, and it is precisely in the towns that the economic and racial complications would be most severe and most resented.

(4) It is well understood that the benefits of the White Australia Policy are purchased at a price which

is to be measured not merely in the monetary cost of living, but in the inconveniences—not to say hardship—suffered through lack of domestic help by white women in the country, and more particularly in Northern Queensland. Yet for lack of experience of easier conditions, as in South Africa, this hardship is borne without complaint, and is, indeed, preferred to the perils of miscegenation, which as a rule weigh heavily in the minds of European women. Nor, indeed, would it be fair to attribute lack of domestic help to immigration restrictions. Rather is it due to the high wages and a general distaste for domestic service noticed in all civilised countries since the war.²⁹

(5) Whatever be the merits of the original reasons for the policy, its maintenance is expedient now, since it keeps out not only important practical difficulties of administration, but also racial problems the gravity of which, in view of South African and American experiences, needs no demonstration. To Asiatic immigration Australian sentiment may be taken, then, to be irrevocably opposed. And even as regards immigration from Europe at this early stage of Australian development, popular opinion in the Commonwealth undoubtedly favours a policy of selective immigration on the racial theory underlying the United States' Immigration Act of 1924. Popular preference for "Nordics" is no stronger in the United States than in Australia. On the more debatable question whether the adoption of this policy is expedient at the present stage, many Australians who know Professor Ellsworth Huntington's work take confidence from his remarkable pronounce-

20. The percentage of females in domestic and personal service in New South Wales was rather more than 8 per cent. of the female population in 1901, and rather less than 6 per cent. in 1921.

ment in *West of the Pacific* in returning an affirmative answer. “. . . the best authorities,” he writes at page 387, “tell us that if we had had no immigration since the time when our population was only equal to that of Australia (six million odd) our population to-day would only be in a moderate degree less numerous than is actually the case. It would be homogeneous, and would have far more of the strong qualities which still enable the descendants of the Puritans to furnish an overwhelming proportion of our leaders.”

To those who regard control of racial stock as the most important factor in the problem of nation-planning, Professor Huntington's counsel to keep the Australian stock undiluted is thoroughly welcome, even though a policy based thereon may well depend for its success upon the very absence of that time-limit which, as Mr. Bruce,³⁰ among other prominent Australians, has not failed to remind his countrymen, conditions the Australian experiment.

POSITIVE ASPECT—PROMOTION OF WHITE SETTLEMENT

If the White Australia Policy exhibits the essentially negative aspect of Australian immigration policy, it remains to explain the positive aspect.

Under the Constitution Act the Federal Parliament is given the power to make laws concerning immigration, which was early exercised by imposing the restrictions on the immigration of the undesirable classes already referred to. Promotion of desirable immigration was left to the States, of which the first to display any

³⁰ *e.g.*, in speech at Sydney, April 13, 1927, referring to the Economic Conference convened by the League of Nations for session at Geneva in May, 1927.

activity in this connection was New South Wales in 1905. As the result of discussion at the Imperial Conference, 1907, it appeared that the co-operation of the Imperial Government could not be extended beyond supporting the emigrants' Information Office in London, while the Commonwealth was not prepared to take control of the existing immigration machinery in England without the co-operation of all the Australian States, which could not then be secured.

Meanwhile the States took steps of their own to encourage immigrants for whom there was a special demand, but as regards suitable adults for settlement on the land, without great success.

Generally speaking the States recruited their immigrants through agents employed by the shipping companies in return for a capitation fee in respect of approved applicants, and they made direct contributions to the cost of fares of such applicants. Considerable success attended private organisations for securing young immigrants, *e.g.*, of British boys between the ages of fourteen and eighteen, under the Dreadnought Scheme, and of younger children selected by the Child Immigration Society of Oxford under Kingsley Fairbridge.

In the period 1911-14 the total number of assisted immigrants was:

1911—139,020, of whom 124,061 were British.					
1912—163,990	„	„	146,604	„	„
1913—140,251	„	„	122,443	„	„
1914—110,701	„	„	93,136	„	„

The net immigration (excess of arrivals over departures) to the six States and two Territories (Northern Territory and Federal Capital Territory) in 1911-14 was 190,446.

CO-OPERATION WITH IMPERIAL GOVERNMENT.

During the War immigration was practically suspended, and was not resumed until 1920. In that year an arrangement was made between the Commonwealth and the State Governments that the Commonwealth should become responsible for the recruitment of immigrants required by the States and for their transport to Australia, while the States undertook to advise the Commonwealth of the numbers and classes of immigrants they were prepared to receive. In other words, the Commonwealth selected the immigrants according to the requirement of the States, and brought them to Australia, and on their arrival the State Government assumed the responsibility of placing them in employment or on the land. This division of powers is one of the principal causes of difficulties to the Australian authorities. Owing to the varying seasonal conditions the State requisitions fluctuate considerably from time to time, with bad effects on recruiting and shipping arrangements.

In 1921 the Commonwealth took over all immigration machinery in Great Britain, abolished the system of capitation grants to agents, and appointed a number of medical referees throughout Great Britain to examine applicants.

The system of assisted immigration was still further extended in 1921 by the co-operation of the British Government.

Persons entitled to assisted passages fall into two classes—(1) selected and (2) nominated immigrants. Selected immigrants are those, such as farm workers and domestic servants, recruited by the Commonwealth on

the initiative of a State Government. Nominated immigrants are those nominated by persons resident in Australia, who undertake to be responsible for them on arrival so that they shall not become a burden on the State. The nominators submit their application for assisted passages through the State Immigration Offices in the various capital cities.

Where assisted passages are granted, the effect is that children under twelve are carried free, juveniles between seventeen and nineteen years, who ordinarily rank as adult passengers paying full fare, pay £5 10s. each, married couples, including widowers and widows, and wives nominated by husbands, with at least one child over nineteen, pay £11 per parent (children at rate according to age); others, including children nineteen years and over, £16 10s. each. These rates are the result of contributions made jointly by the Commonwealth and British Governments under agreement after-mentioned, and are valid until March 31, 1928. At the Imperial Conference in 1926 it was agreed to recommend that women accepted as domestic servants should be carried free, and this scheme is now in operation.

In 1921, in furtherance of post-war emigration schemes, the British Government summoned an Imperial Conference on emigration, which recommended financial co-operation between the British and Dominion Governments in a comprehensive policy of redistributing population, particularly in connection with land settlement schemes. These recommendations were accepted by the Imperial Conference in the following June-August, and the British Government passed an Empire Settlement Act in 1922 which empowered it to co-operate with any Dominion in any scheme mutually agreed on. The con-

tribution of the British Government, which was in no case to exceed half the expenses of any such arrangement, was limited to £1,500,000 for the first year and £3,000,000 for each subsequent year, exclusive of any sums received as repayment of advances. Immediately after the Act was passed, an agreement was made between the British and Commonwealth Governments whereby one-third of the cost of passage of an approved settler was to be contributed by the two Governments jointly, and advances covering the rest of the passage money might also be granted in certain circumstances. It is under this Agreement that the rates above quoted have been fixed.

The only large scheme undertaken by an Australian State with assistance provided under this Agreement was a group settlement scheme in Western Australia. This State undertook to place 6000 settlers with their families on farms of their own at an estimated cost of £6,000,000, excluding passages: the Commonwealth Government was to raise the necessary loans and the British Government agreed to contribute a sum equivalent to one-third of the interest on the loan for a period of five years. 1,352 settlers were introduced under this scheme and accommodated in the heavily timbered southwestern district. The scheme was prosecuted for two years but with disappointing results. According to a Royal Commission, which reported on the undertaking, the farms, which the State undertook to provide for £1,000, were costing between £1,400 and £1,500, a sum considerably in excess of their market value; the British settlers were inexperienced and had not been tested in agricultural work before selection. The relative failure seems to have been due to errors of administration.

Recruiting for the West Australian scheme is being carried on to a limited extent only.

In view of the land hunger of Australian citizens, none of the other Governments availed themselves on a large scale of the resources made available by the British Government.

In 1925 a new Agreement was accordingly made, whereby loan money will be made available to the Governments of various States at very low rates of interest, to be used for settlement or for such public works as will tend to develop settlement areas or increase their population carrying capacity.

The maximum amount of loan money is £34,000,000 spread over a period of ten years. Fifty per cent. of the funds may be used for the settlement of Australians on the land, but for every £75 received by a State Government under the Agreement at least one assisted immigrant shall sail direct from the United Kingdom and be settled in Australia, not necessarily on the land. Of every 10,000 assisted migrants, 3,750 may be persons without any capital. Effective Australian co-operation in this scheme involves the raising of an additional pound for pound, since £30,000,000 of this loan money was spent in 1926.

The Commonwealth Statistician points out that if full advantage is taken of these loan moneys, 450,000 new settlers must be absorbed over a period of ten years; 45,000 per annum is slightly less than the total number of assisted passages in the best pre-war year, 1912, viz., 46,712.

COMMONWEALTH LEGISLATION, 1926.

In accordance with this Imperial scheme, the Commonwealth Government in 1926 passed an important

Development and Migration Act³¹ constituting a Commission of four members charged with the duty of stimulating the development of Australian resources as a preliminary to attracting increased numbers of immigrants. The Commission is to organize a body of Scientists who will proceed with a survey of the resources of what the Prime Minister, in introducing the measure, described as "the greatest undeveloped country in the world." The Commission will then formulate plans for "utilising our resources and the most effective and rapid method of dealing with them." It will act as a clearing-house in respect of Australian needs for labour and the possibilities for absorbing overseas capital. It will advise the Minister for Markets on the outlets for Australian produce, and will co-operate with the States in all their developmental works. The Commission will also take charge of the London Migration Office of the Commonwealth. For funds the Commission will depend upon the Treasurer. The Commonwealth Government undertakes not to approve of any scheme not recommended by the Commission, but power is reserved to Parliament to give its assent to any matter, whether approved by the Commission or not.³² The scope of the Commission's activities was outlined in a Memorandum presented to the Imperial Conference, 1926,³³ by Mr. Gepp, the Chairman, who laid stress on absorptive capacity as the dominating factor in the problem of populating Australia.

31. No. 29 of 1926.

32. The Commission consists of Mr. H. W. Gepp (formerly General Manager of the Electrolytic Zinc Company of Australia), Chairman; Mr. C. S. Nathan (Chairman of Directors of Messrs. Atkins Ltd., Perth, W.A.); Mr. J. Gunn (lately Labour Premier of South Australia), and Mr. E. P. Fleming (formerly Under-Secretary for Lands, New South Wales).

33. See *Appendices to Summary of Proceedings*, pp. 287-90 (1927), Cmd. 2769.

In answer to a question in the House of Representatives on March 3, 1927, the Prime Minister gave an account of the activities of the Commission since October last. These included investigations and recommendations which had been adopted by the Government in regard to a number of schemes approved under the £34,000,000 Agreement, involving an expenditure of over £6,000,000. Further schemes submitted by the States and amounting to £10,000,000 are under investigation. In addition, the Commission has had referred to it and is giving attention to the following questions:

- (a) Unemployment survey, including the problem of seasonal variations, which was reported on in June, 1928.
- (b) The present position and future possibilities of Tasmania³⁴ on the economic side, in consultation with the State Government and the Council for Scientific and Industrial research.
- (c) The dried fruits industry throughout Australia.
- (d) The gold mining industry of Australia, with particular reference to Kalgoorlie (Western Australia) and
- (e) The economic utilisation of Australian oil shale deposits.

Consideration is also being given to certain phases of the wool and wheat industries, and to the meat and dairying industries and their attendant problems of breeding, animal nutrition and improved pasturage.³⁵

It should be added that on his return to Australia in February last the Prime Minister (Mr. Bruce)

34. For present position of Tasmania, see *The Round Table*, June, 1927.

35. See *Commonwealth Parl. Debates*, 1st Sess., 2nd Period, 1927, No. 1, p. 58.

announced that he had persuaded the British Government to send to Australia two or three of the best business and financial men in Great Britain to enquire into trade development and the question whether Australia could absorb more migrants, the work of these experts to be supplementary to that of the Australian Development and Migration Commission. At the time of writing their names have not been announced, but it is understood that their main concern will be with the possibilities of family settlements (which have proved successful in Canada) and with the extremely costly matter of rural housing, for which large amounts of loan money would be required.

On the general problem of land settlement in Australia, the best summaries of local opinion are to be found in Australian chronicle articles appearing in *The Round Table*, on the basis of which the following brief statement may be given.³⁶

For settlers from the United Kingdom whom it is desirable to encourage to settle on the land, the primary products which offer most prospects are wool, wheat, meat, cotton, fruit, and dairy products. With the necessary capital, production of all these is relatively easy, but, owing to the small home-population, successful production is conditioned by the problem of marketing. Share-farming offers the immigrant with small capital a means of acquiring local experience and of making savings.

Pure-bred merino wool, and indeed wool of other kinds, in the production of which Australia excels owing to her advantages of climate and natural grasses, presents no difficulties of marketing. Australian wheat,

36. Cf. *Round Table*, 1923, No. 53, p. 153 *et seq.*

especially the hard varieties, sells easily abroad. Meat presents a much more difficult problem. For mutton and lamb profitable markets exist in the European market, but for meat, which can be produced on a large scale in Australia, distance from European markets proves one of several handicaps in competition with Argentine and other growers.

For Australian cotton of good quality the prospects appear bright. Dairy products are mainly sold locally, with a considerable export trade. Sugar and fruit present the greatest difficulties. With the protection of a high tariff, reinforced at present by the embargo upon sugar grown by black labour, the sugar industry is carried on in Queensland by white labour at the cost of the Australian consumer throughout the continent.

It is in regard to dried and canned fruit that the marketing problem is most acute and likely to become worse as more of the orchards worked by small farmers and returned soldiers on irrigation areas—in Mildura and Renmark, on the River Murray—come into bearing. Even with the assistance of marketing pools, the export trade has not proved profitable.

Immigration on any but a small scale is further conditioned by the provision for land settlement. As the best lands are already alienated and the Crown lands comprise almost the whole of the useless third of Australia, "the problem of land settlement is in the main one of a subdivision and re-settlement." Subdivision, moreover, is costly. The State, in compensating owners for their land, pays cash, and must act as land-agent in finding purchasers on long credit terms for the subdivided holdings. The burden on State or immigrant or both may well be heavy and long.

A further practical difficulty—already alluded to—is caused by the division of powers between the Commonwealth and the State, the Commonwealth controlling immigration and the States the land.

In view of these considerations, which indicate that the absorptive capacity of the State as regards land settlement cannot be rapidly increased, the Oversea Settlement Sub-committee of the Imperial Conference recommended enquiries as to the possible opening for British immigrants in industry and in other directions.³⁷ This topic, with attendant enquiries into the state and causes of unemployment, has accordingly been included in the programme of the Australian Development and Migration Commission mentioned above.

The following figures, showing the outward movement of British migrants to Australia in 1925-26, are taken from the Sub-Committee's Report:³⁸

To Australia—

Outward movement of British migrants for six months ending June 30, 1925 & 1926 (Board of Trade Return).		Assisted under Empire Settlement Act 1922 for six months ending June 30, 1925 and 1926.		Percentage of Total outward movement assisted under the Act.		Assisted under Empire Settlement Act 1922 for nine months ending Sept. 30, 1925 and 1926.	
1925	1926	1925	1926	1925	1926	1925	1926
17,979	21,630	11,987	16,422	67	76	17,621	25,362

The Northern Territory, which was taken over by the Commonwealth from South Australia in 1911, has always presented a problem of difficulty. Variouslly regarded, as a recent writer³⁹ says, as "a White Elephant, an Untamed Territory, or as a convenient

37. *Imperial Conference, 1926, Appendices, etc., 1927, Cmd. 2769, p. 281.*

38. *Op. cit.*, p. 286.

39. In the valuable article by G. L. Wood on the "Settlement of Northern Australia," in *The Economic Record*, Vol. 2, p. 1. (Melbourne University Press, Melbourne, 1926.)

barrier against Asiatic invasion,' the Territory throughout its area of 523,000 square miles has a white population of only 2,400.

At long last, however, the Territory is receiving adequate attention from the Federal Government, which early in 1926 obtained statutory powers⁴⁰ to construct, at a cost not exceeding £1,700,000, the first section of the North-South Railway, which will eventually connect Darwin with the East-West system in the south. Later in the year was passed the *Northern Australia Act* (No. 16 of 1926), by which provision is made for remedying the admittedly faulty administration of the Territory. The Act divides the Territory into two parts. North of the twentieth parallel is to be known in future as North Australia, and south of that line as Central Australia. A Government Resident is to be appointed for each part (with headquarters respectively at Newcastle Waters and at Alice Springs), assisted by an Advisory Council, two members of which are to be elected and two appointed by the Federal Government. The Resident will be responsible for such of the services as are not administered from Melbourne or entrusted by the Act to the North Australian Commission. This Commission, which is to consist of three members appointed for five years, and such additional terms of five years as may be determined, has mainly developmental duties, *e.g.*, to maintain and operate railways, construct and maintain roads, telegraphs, ports, and harbours, and, to carry on water boring and water conservation. Moreover, it is to prepare for the Minister of Home and Territories a complete scheme for the development of Northern Australia. The Act,

40. *Oodnadatta to Alice Springs Railway Act*, No. 3 of 1926.

however, is merely administrative machinery, the initiative and responsibility for expenditure on public works resting with the Minister and the Federal Treasurer, subject to the approval of Parliament. With the same object of obtaining expert advice, which may be helpful to the Territory as well as to Australia as a whole, the Federal Government recently employed Sir George Buchanan, a well-known engineering expert, to report upon the ports and harbours of Australia. His Report was first published in summary form and recently appeared in two volumes.

CHAPTER IV.

IMMIGRATION IN RELATION TO PRIMARY AND SECONDARY INDUSTRIES.

By G. L. Wood, Senior Lecturer in Economics,
University of Melbourne.

- I. The Immigration Problem.
- II. Economic Aspects of Immigration.
- III. Absorptive Capacity of Primary and Secondary Industries.
- IV. Racial Adaptation to Rural Industry.
- V. Conclusion.

I.

The recent report of the British Industrial Transference Board contains much outspoken criticism of Dominion Migration policies. In it the sincerity of the desire for immigration on the part of the overseas dominions and the methods of selecting migrants in Britain are both called into question. There seems to be some necessity, therefore, for a plain statement of the issues involved in migration within the Empire as they are seen from the Australian angle. The attention now focussed upon the problem is undoubtedly due to the protracted period of industrial depression in Great Britain, and migration is regarded as the best means of relieving the severe unemployment characteristic of the post-war period. Different interpretations in different parts of the Empire may, however, be placed upon Lord Milner's statement of the objective, namely, "the redistribution of the white population of the Empire in a

manner most conducive to the development, strength and stability of the whole.”

The first step towards this redistribution was the establishment in 1921 of the Overseas Settlement Committee. The Imperial Conference of the same year also recommended a comprehensive policy of Empire land settlement, and the outcome of the deliberations was the Empire Settlement Act of 1922. Under the terms of this Act an agreement was reached by which £34,000,000 was to be available for borrowing to settle British migrants on the land in Australia; and to advise in the administration of that fund the Commonwealth Development and Migration Commission was formed in 1925. These arrangements amounted to an acknowledgment of the fact that the methods by which migration had been directed formerly were no longer adequate to the situation. The agreement between the two Governments constitutes the basis for the greatest scheme for assisted migration that the Empire has yet seen.

The dominating factor of the whole situation is to be found in the circumstances of the main body of prospective migrants. These people were without capital, and the Commonwealth Government was unable to finance the huge preparatory schemes necessary to the rapid settlement of large numbers of people. The sum provided by the British Government was intended to rectify this deficiency in private and public funds.

The gain which was to accrue to both parties by this arrangement rested upon the process by which the surplus population of Great Britain was to be transferred from the crowded industrial centres of the Mother Country to the “extensive unpopulated areas and ample resources” awaiting development. But in

the process of realising the scheme difficulties arose which should have been apparent from the beginning. The Dominions professed to be anxious to secure competent farmers and rural labourers, but this was precisely the class of labour that Britain could least afford to lose. As the scheme has developed it has become clear that the bulk of the immigrants were being drawn from industrial towns, and that, after a longer or shorter trial of the new conditions many of them revert to industrial occupations in the Australian capital cities. Here they enter into competition with Australian workers for positions in factories, and in this circumstance is to be found the reason for the opposition of the trade-unions to immigration, and the belief that it is the cause of extensive unemployment. Further, the official statistics of population movements indicate that for every migrant successfully settled an Australian worker leaves the country for the city. In Victoria alone between 1922 and 1927 the population of the four big cities increased by 193,000 persons, while the population of the rest of the State showed a decline of 15,000 persons.

What is now needed is a frank admission of the costly failure of the attempt to make efficient farmers of industrial workers, and a realisation of the great difficulties in the way of closer settlement in Australia. A clear official statement of the position will furnish a basis upon which more satisfactory schemes may be shaped, and will also help to avoid recriminations that can serve no useful purpose within or without the Empire.

The objectives of a rational immigration policy must be stated almost wholly in economic terms. The problem

is clearly that of blending the right proportions of land, labour and capital in Australian industries. The right proportions as understood in Australia are those which will enable the maintenance of present economic standards. This involves such a distribution of the population that exactly that number is engaged in each type of industry which will produce the customary and reasonable needs of the rest of the community. This is the conception of a "balanced economy." But as Australia is not a self-sufficing community, this also involves the necessity for acquiring by trade the greatest possible volume of things she does not produce for the surplus of things she does produce.

II.

It is this aspect that the economist would stress in any attempt to determine the absorptive capacity of the Commonwealth; and it is, despite opinions to the contrary, the aspect about which we know least. In order to determine, in advance, what relation exists between resources and possible population, *i.e.*, to estimate our "optimum population," the following preliminary surveys would appear to be urgently necessary:—(i.) A thorough survey of Australian population, with particular reference to racial composition, power of adaptation to particular environments and occupational distribution. (ii.) A comprehensive soil survey. (iii.) Adequate research into power resources and supplies of raw materials, and into the capacity of Australian industries for absorbing labour. (iv.) A study of the seasonal labour turnover as between primary and secondary industries. (v.) An analysis of transport needs and facilities, with the aim of securing more

efficient direction and co-ordination of State activities; of planning future extensions, and of assisting closer settlement. (vi.) Investigation of all the problems of marketing as a means of expanding both primary and secondary industries. (vii.) An expert study of finance in its relation to the settlement problem, *e.g.*, the achievements of agricultural credit schemes, rural banks, bounties, etc. These comprise the main problems of Australian settlement, and are the real justification for the cautious policy of thorough exploration adopted by the Development and Migration Commission. When the problem is thus resolved into its component parts immigration appears more and more as a question of labour opportunities which must be definitely ascertained before we proceed to obtain the labourers.

That the growth of Australian population is not slow has been demonstrated by Mr. Wickens. A change in the rate of growth that is of great importance in its relation to migration has been noted by Professor

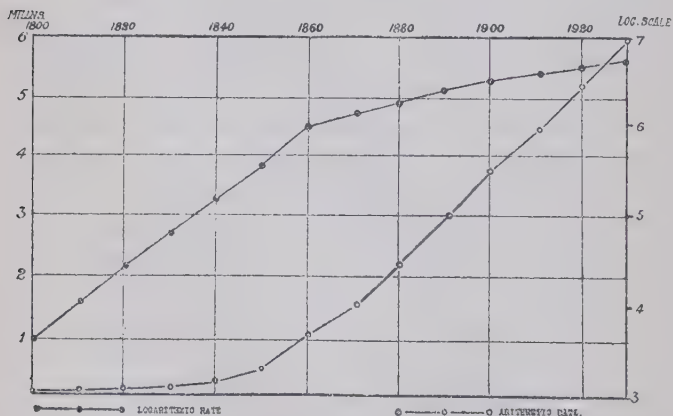


FIG. 3. Rate of Increase of Population in Australia.

Copland. This change is clearly shown in the accompanying graph, where the slope of the logarithmic curve is seen to change rather abruptly after 1860. Some further research into the factors causing this change in the rate of growth would appear to be necessary, especially in its bearing upon the assimilation of immigrants.

Any preliminary estimate of the number of immigrants we can assimilate comfortably must take into account all these factors. The number of variables involved in the reckoning intensifies the difficulty of arriving at any estimate of optimum population, and must seriously discount wild guesswork as to the total which Australian population will reach at any time in the future. In particular, the still wilder comparisons of the resources of the United States and Australia as a basis of forecasting are to be deplored, especially as used by advocates of closer settlement. If such a comparison is to be made, then it must be with the agricultural west of U.S.A. rather than with the intensely industrial east.

The standard of living, in this connection, is seen to be merely an expression of relative prosperity, an attempt to get a mathematical index of welfare, *i.e.*, of national income divided among population. It is, therefore, essentially a question of the population which the resources of a country can maintain, since it is obvious that, if a certain level of comfort is to be preserved, there must be a limit beyond which population cannot increase. The difficulty arises when we attempt to locate this point of "optimum" population, as Mr. Benham's paper shows. Because of our deficient knowledge and inaccurate data the determination must be arrived at by

a process of trial and error. We shall know by our diminished prosperity when we have passed the point of "saturation density."

There is apparent, both within Australia and overseas, a disinclination to admit the limitations imposed upon closer settlement by our climatic conditions. These limitations are very definite in their bearing upon the whole problem. In fact, a map showing population distribution in Australia suggests that the maximum population is already being maintained in some rural areas in the south-east. The accompanying map compiled from the data given by the census returns of 1921 shows the actual "spread" of population in that year. When this distribution is studied in conjunction with the evidence of soil and climate control, certain conclusions are suggested: (i.) The agricultural areas of the south-east, largely owing to irrigation schemes, are already well on the way towards optimum density. (ii.) The greatest possibilities for absorbing immigrants are presented by the south-west of Western Australia, with its reliable rainfall, and by Queensland, with its varied production. (iii.) A great field for research into the possibilities of development occurs in the tropical north, but it must await the closer settlement of the more temperate south and east. (iv.) Australian population tends to become denser rather than to spread, owing to the very pronounced rainfall control that has been demonstrated by Professor Griffith Taylor. The effect of this control tends to be emphasized more and more as development proceeds.

These facts are of dominant importance in their effect upon migration schemes. They are also salutary correctives to the assumptions that boundless empty

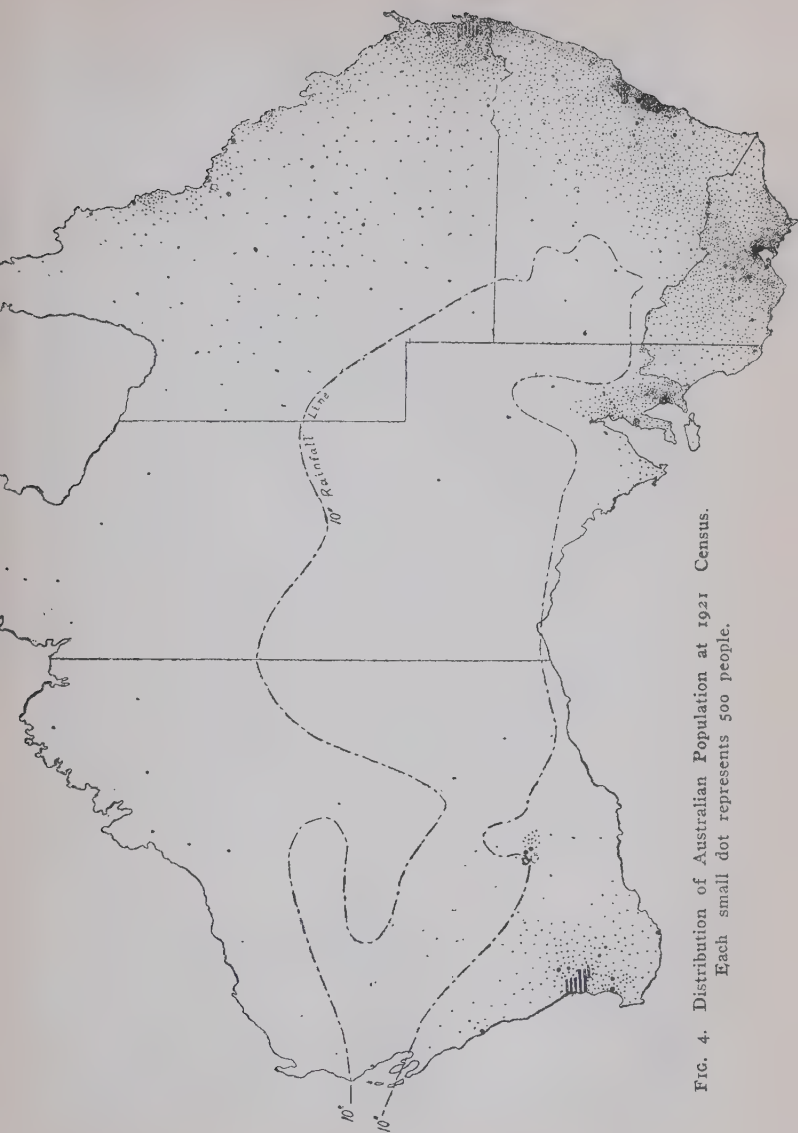


FIG. 4. Distribution of Australian Population at 1921 Census.
Each small dot represents 500 people.

spaces await the plough of the settler. In view of the fact that nearly all of the cultivable land has been alienated in Australia, they help to support the view that closer settlement will take place as and when it becomes profitable. The transition from pasture to agriculture, which many people assume to be the whole problem of settlement, is not the simple process that it appears. The great economic barrier to such a change is the high price of pastoral as compared with agricultural products—a differential advantage that has held up closer settlement for many years in some areas. Very careful investigation of the possibilities through more efficient agricultural practice, and unquestionable demonstration of an equal or greater chance of profit through such a change, are the natural and least expensive means of forcing pastoral lands into agriculture, a fact that is thoroughly realised by the Empire Marketing Board.

The rural position in Australia is clearly shown by the statistics. The total area under crop during 1925-6 season showed some expansion beyond that of 1914-5 [16.8 million acres against 15.6 million], although the areas sown fluctuate from year to year on account of seasonal influences. The area under crop per thousand of population, however, was only 2,803 acres in 1925-6, against 2,755 for the 1914-5 season. Again, 16.8 million acres, or .9 per cent. of the total area of the continent, was under crop in 1925-6, and only 18.5 million, or .97 per cent., in the record season of 1915-6. These figures suggest that the limits of extensive cultivation have been reached and that future development must lie in the direction of more intensive cultivation. They tend to support the conclusion that under present methods and

in current price conditions about one per cent. of our area can be cultivated per annum. We have, however, no index of the total area capable of maintaining crops; and, despite what has been said above, a big expansion is doubtless possible if we are prepared to meet the expense. Much of the land for such an extension would have to be cleared and transport provided at heavy cost. A large proportion of new areas must consist of light soils and dry areas of doubtful capacity. Furthermore, even in the settled portions, where the greatest development is possible, agriculture is already operating under conditions of diminishing returns, that is to say, that extensions of area and increased output are possible only at increasing costs. Our real rural problem, therefore, concerns the possibility of increasing farm and station output through more scientific methods. That there are such possibilities is shown when the average Canadian yield of 16 bushels per acre is compared with the Australian average of 13 bushels for the same period, and when the researches of the Empire Marketing Board into the effect of top-dressing pastures is considered. Progress, however, is not an easy matter in the transition stage between extensive and intensive methods, and much laborious research must go to the solution of our settlement problems.

III.

This analysis leads naturally to an examination of primary and secondary industries with regard to their capacity to absorb labour. The main tendency observable in Australia is for urban areas to increase their population at a faster rate than rural areas. This tendency is shared by other countries in a similar stage

of development as the statistics for Canada, New Zealand and the Argentine show. Between 1911 and 1921 the rural population of Australia declined from 42 to 37.5 per cent. of the total, and the figures of the other countries named indicate that certain factors are operating which tend to prolong the stage of extensive cultivation, that is to say, which make agriculture possible with diminished personnel. The prime causes for this changing distribution of population have been analysed by Dr. E. W. Shanahan (*Economic Journal*, September, 1927).

The decline in the proportion of rural population is to a great extent a measure of the increased productivity of farm labour, and the increase has been greatest in grain-growing countries. The estimate that the 2.24 hours of work necessary to produce a bushel of wheat in 1833 had fallen to .14 of an hour by 1923 is a striking illustration of the increase in the productivity of farm labour, although this takes no account of the increase in labour cost. Improvements in special types of farming, the general progress in agricultural science and technique, and the localisation of crop farming according to soil and climate have all meant a steady reduction in labour required in such work.

“The essential feature in the development of the last half-century and more has been this, that while the net cost at the farm in the form of human services there rendered has declined remarkably, and is probably still declining slowly, a steadily increasing portion of the final cost to the consumer has gone in remuneration for the other charges, namely, those for supplying farm equipment and for the services of transportation,

marketing and elaboration. Further, there has been a steady migration of the industries responsible for these latter factors from the country districts to the towns." This is an able summary of the causes redistributing the Australian population. In particular, the use of machinery and power in rural industries is increasingly effective in diminishing the demand for labour in the country and increasing it in the cities. All our transport developments, both rail and motor, have intensified the concentration of mechanical trades in the cities.

But even more pronounced in Australia has been the transference to the cities of industries concerned with the processing of primary products. Very striking instances of factories moving to the sea-board have occurred in Victoria in recent years, and no doubt the tendency is just as pronounced in the other States. The transference of these industries from the country to the city, the greatly increased demand for labour in making transport equipment and in moving rural products, and the large amount of labour employed in making machinery that displaces manual labour in the country must be placed alongside the great increase in the number of people engaged in commerce in the cities, in order to arrive at a proper appreciation of the problem of rural depopulation. The net result is that the greater part of the material gains that derive from machinery and modern farm technique has been appropriated by the industrial city. This situation constitutes a very powerful factor against which immigration schemes aiming at rural settlement have to contend.

These changes may be indicated by official industrial statistics. We may regard primary industry as falling into two groups, (i.) direct, *i.e.*, the mere collection of

nature's bounty as in mining, fishing and forestry, and (ii.) production of plants and animals as in the agricultural and pastoral industries. Then, if secondary industries are defined as those which are engaged in the processing of primary products, we find the proportions for each type of industry have shown marked changes in late years. The following table for two quinquennial periods clearly indicate these changes:—

	Direct.	Agricultural and Pastoral.	Manufacture.
1906-11	17 per cent.	61 per cent.	22 per cent.
1920-25	9	59	32

Australia is, in fact, following the natural evolution of all countries by engaging increasingly in secondary industries. This is even better illustrated by the statistics relating to breadwinners at the last four census periods.

OCCUPATIONS OF BREADWINNERS IN AUSTRALIA.

(Percentage of Total Breadwinners.)

Occupation.	1891.	1901.	1911.	1921.
Professional	6.2	6.8	7.3	8.7
Domestic	11.6	12.2	10.1	9.1
Commercial	12.3	13.6	14.5	15.3
Transport and Commu- cation	6.8	7.4	8.0	9.0
Industrial	30.7	26.1	28.4	31.2
Primary	30.7	32.5	30.4	25.8
Independent	1.7	1.4	1.3	.9

Although the proportions of different groups have varied, it should be noted that the actual numbers of people engaged as primary producers have risen from 419.4 to 599.75 thousands, but that secondary workers have increased from 419.4 to 725.8 thousands between the 1891 and the 1921 census periods. The number of

people engaged in secondary industries in 1928 is probably not less than 765,000. Primary producers have thus ceased to be the most numerous of the occupational groups in the Commonwealth. The greatest decline took place in the pastoral and mining industries, where the numbers employed fell, between 1911 and 1921, 10 per cent. and 39 per cent. respectively. These changes should be read in the light of other alterations in the economic structure. The chief of these has reference to the diminished average size of the pastoral holding, and the increased average size of the agricultural unit. The tendency for bigger farms is becoming very pronounced in most of the wheat-growing areas, and is merely another aspect of the growing use of mechanical appliances in agricultural operations.

The facts, however, do not afford a comprehensive statement of the employment problem in Australia. A feature of rural industries is the marked seasonal character of the occupations. With the exception of shearing and dairying, which are continuous, rural industries demand large quantities of labour for short periods ranging from three to six weeks. Thus fruit picking and wheat harvesting, and the transport operations connected with them, depend on a reservoir of labour which is mainly domiciled in the cities. These conditions are responsible for the markedly seasonal character of unemployment, which usually reaches its annual peak in all States during the winter months. They are also responsible for an under-statement of the numbers of people engaged in rural industries. The statistics cited above indicate that one breadwinner in four is mainly engaged on the land. From an examination of the death returns, Prof. J. W. Gregory reaches the conclusion that

the estimate of one in three is nearer the truth. Neither of these estimates, however, takes into account the great number of casual workers who leave the cities for the wheat and fruit areas every summer.

IV.

One other aspect of the immigration problem, as it concerns primary and secondary industries, has reference to the racial composition of Australian population and to the relative capacities of different racial stocks as settlers. Such terms as "racial" and "national" are inadequate to convey exactly what is meant, but the statement that the Australian population is 95% British and 99% white illustrates loosely the point of view. Whether it is desirable in the best interests of national welfare to retain a homogeneous racial character must be regarded as a deeply scientific aspect of the problem. But science and sentiment often pull different ways in the sociological field. The adaptability, physique and efficiency of a people in any given environment are the main issues. These cannot be decided on sentimental grounds, and there is a real necessity for expert examination of the ideal composition of a white population. Such an inquiry would determine just what are the mental and physical contributions that are made to the character of our population by different European stocks.

Australian immigration schemes are lacking in scientific direction with respect to *occupation*, i.e., as to how immigrants will serve to strengthen weak places in our industrial economy and as to the *numbers* of satisfactory immigrants available and assimilable. Australian immigration policies at present are ostensibly dominated by the necessity for immigrants willing to engage in

agriculture, and we are pouring people on to the land in the hope that some will stay. We have no means, however, of quantitative measurement of our labour requirements, neither have we adequate means of selecting or inducing the kind of immigrants to satisfy those necessities. There is at least a very real danger that we are causing congestion in certain industrial and unskilled occupations by sheer lack of method.

To return to the composition of Australian population from the racial aspect, it is of importance to our purpose to notice that steady changes have taken place in the last four decades which have gone almost unnoticed. Some of these are indicated in the following table, and constitute population trends that may or may not be good for our national life. At any rate it is incumbent upon the immigration authority to inform itself of what is happening, and to be prepared to apply such correctives as the most expert investigation may deem to be necessary. The "happy accident" theory of national expansion may not work out quite so well in the future as it has done in the past.

**COMPOSITION OF AUSTRALIAN POPULATION AS
INDICATED BY COUNTRY OF BIRTH.**

	1891.	1901.	1911.	1921.
Australian-Born	68.01	77.07	82.33	84.29
England and Wales ..	14.81	10.42	8.06	8.48
Scotland	3.90	2.70	2.09	2.0
Ireland	7.15	4.88	3.13	1.93
TOTAL BRITISH	25.88	18.01	13.34	12.47
North European	2.37	1.79	1.41	1.03
Mediterranean .. . .	.15	.17	.17	.19
TOTAL EUROPEAN ..	28.4	19.98	14.92	13.70
Asiatic	1.47	1.25	.82	.56
African .. . . .	.10	.08	.11	.12

Some of the tendencies which the successive census figures reveal merit brief comment:—

(i.) The percentage of native-born is steadily increasing. National in-breeding for a young and undeveloped country may be neither socially wise nor economically efficient. At any rate, the insular habit of self-regarding rather than other-regarding must be strengthened by the tendency indicated, and may prove a real weakness in international relations, as well as in economic flexibility.

(ii.) Decreasing percentages of "Total British" in the table indicate a proportionate diminution in the stream of British migration to Australia over the long period. Where one person in four of the population at the 1891 census was born in Britain, the proportion in 1921 was only one in eight.

(iii.) The small and decreasing percentage of non-British European migration prompts some observations. These may be briefly stated: First, that the proportion in the past was sufficiently small to be thoroughly absorbed, and indeed becomes indistinguishable from the mass in the second and third generations; and, secondly, that Australian opinion has been influenced quite disproportionately by the relatively small Mediterranean migration, even when the greater numbers of the post-war period are considered. It is obvious that the saturation point for these immigrants is far ahead, particularly as they are of a virile and adventurous type that will advantageously reinforce the native-born population. Still another aspect of our immigrant body has reference to the adaptability of certain racial stocks to particular environments. The settling of the Italian in coastal North Queensland is a case in point. Definite

and peculiar contributions have been made in the past to the economic development of certain Australian areas by national groups. Many of these have been indicated by Mr. Jens Lyng, of the Commonwealth Bureau of Census and Statistics, to whom the writer is indebted for the graph which illustrates this section. This

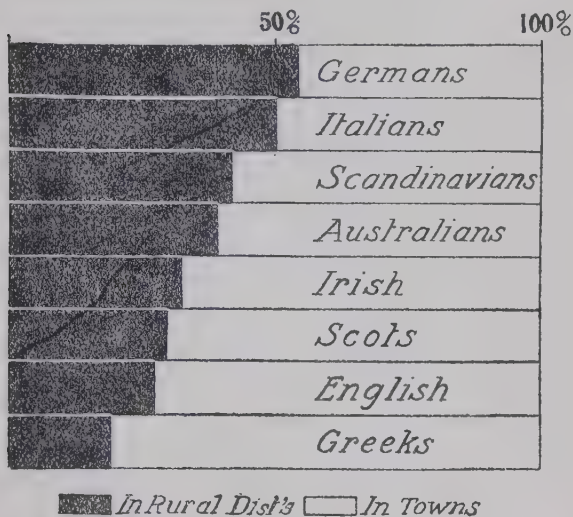


FIG. 5. Distribution of Australian Immigrants as between Country and Town, in national groups.

enforces the contention that once we have decided what type of immigrant we need and in what numbers, an analysis of past development should prove invaluable for future guidance. The relative merits of Germans and Greeks for rural occupations, as shown in the graph, will sufficiently indicate what is meant, and the data available from the census returns is a rich field awaiting the investigator of our immigration problems.

Mr. C. H. Wickens has asserted in an earlier paper that in the matter of immigration we have proceeded in the past on the "boa-constrictor principle," bolting huge meals and then resting during the process of digestion. This vivid statement emphasizes the fact that extensive immigration schemes need most careful preparation and organization if the violent fluctuations of those earlier days, with their accompanying economic distress, are to be avoided. Settlement "booms" have been followed by disorganisation of the economic processes of absorption, and by industrial disasters that have for the time effectively checked immigration. These are the real facts of the apparent bolting and digesting phases in our population growth. The definite rate at which we can normally absorb population has been demonstrated, and doubtless may, within limits, be accelerated by organized preparation in the shape of capital provision. As the population grows, and industrial development proceeds, we may expect the rate of absorption to rise also, but a programme of hastening slowly in the expensive preparatory stages of wholesale settlement is the most serviceable contribution to be made by the migration authorities. The lines have to be well and truly laid before immigration can proceed according to express schedule, especially if the view is maintained that expansion of agriculture is the great need. The special and peculiar problems of rural development in Australia arising from marketing and rural disadvantages caused through the tariff add to the difficulties. Perfect co-ordination and absence of friction is, of course, beyond expectation, no matter how carefully the problems inseparable from migration are handled. Seasonal variations, trade booms and depres-

sions, the grievances of special interests on the one hand and of individual misfits on the other, will provide all the grounds for inevitable criticism. Beyond doubt many sections of Australian opinion are afraid of the mal-adjustments that are inseparable from development, too sensitive, maybe, to the initial difficulties and political embarrassments, but an urgent incentive to increase our numbers exists in overcrowded Britain. Political embarrassment must give way to Imperial duty. And Australia has a duty "to reduce the discrepancy between her population and her territory, which is the cardinal fact of the situation." If this duty is to be performed satisfactorily, wise action, based upon a far-sighted view of our needs and responsibilities, must be ensured. Crude nationalism, political warfare and class consciousness are all barriers to be surmounted by an effective policy, *and the task may be beyond the Development and Migration Commission or any other body.* But to have the problem lifted from the arena of party politics to the laboratory of the scientist would be very real contribution to an ultimate and successful solution of our greatest national problem.

CHAPTER V.

SOME EUGENIC ASPECTS OF AUSTRALIAN POPULATION PROBLEMS.

By W. E. Agar, F.R.S., Professor of Zoology,
University of Melbourne.

- I. The Eugenic Problem.
- II. The Descendants of the Present Population.
- III. Future Immigrants and Their Descendants.

I.

The accumulation of biological knowledge, and the realization that evolution is not a matter of historic interest only, but a factor of vital practical concern to the human race, has raised an anxious question in the minds of those who feel a sense of responsibility towards the unborn generations of mankind. Is the human species, or that portion of it represented by our own population, changing for better or worse? Is it changing, that is to say, in respect of its inherent quality, as distinct from its super-imposed culture?

This problem is, of course, the province of the special science of eugenics, and in this chapter it is proposed to apply one or two of the well-known principles of this science to Australian conditions.

There are two biological theses which underlie the whole eugenic position. The first is, that the human species is highly heterogeneous, and the second, that the only certain way by which the innate qualities of a population—whether animal or human—can be changed by human agency, is by influencing the rates of increase

or decrease of the various types comprising that population.

The first thesis, that the human species is heterogeneous, applies in its degree even to a population so uniform in origin as our own. This is plainly true in regard to such obvious physical characteristics as stature, complexion, colour of the eyes, etc., but it is no less true in regard to the more elusive qualities, such as intelligence, moral qualities, and so on. The only reason why the innate heterogeneity may not be so immediately obvious here is that the natural differences between men in these respects may be obscured by much greater super-imposed differences due to different training and environment. The inherent differences are there, however, just as certainly as in the more obvious physical characteristics, though for the reason just mentioned they are more difficult to evaluate.

While nearly all people will agree with the above statement, the second basic eugenic proposition runs counter to the opinions of many persons who look forward to producing great and lasting improvements in the race by improving its environment in the widest sense of that term. But biology tells us that this proposition must also be accepted. The innate differences between one man and another in regard to stature or intelligence are to a very considerable degree inheritable. In fact, the degree of inheritance has been measured in many penetrating researches. Thus if, say, tall men or clever men habitually left more offspring than short men or stupid men, the average height, or the level of intelligence, of the race would increase. On the other hand, it is more than doubtful if a difference in height or learning due merely to superior physical or

intellectual surroundings can be passed on to the next generation, and it is certain that if passed on at all, it is transmitted in very much smaller degree than the inherent differences. The real importance of a good environment is that it enables the inherent potentialities of each generation to develop to the utmost. It cannot improve these potentialities themselves. Or, to be more cautious, any progressive improvement brought about in this way is, to say the least, extremely small compared with the rapid alteration in the characteristics of a race which can be brought about by selective breeding. The history of all our domestic animals illustrates this.

The future population of Australia will be derived from two sources—from the descendants of those already here, and from immigration. We will consider these two sources of our future population in turn.

II.¹

In regard to that part of our future population which will be descended from its present inhabitants, we have no problem that is specifically Australian. The whole civilized world has to face the necessity of preventing the reproduction of those members of its population who are grossly unfit, such as mental defectives, and we are in the same position.

Another major eugenic pre-occupation, however, about which there is more to be said, is the different rates of increase of different sections of the population. It is worth while to inquire how far this problem applies to Australia.

It is well known that in the older civilized countries, such as England, France, the United States, there is a

1. I am much indebted to the Census Bureau for assistance in preparing this section.

much higher birth-rate among those sections of the population engaged in certain occupations than in others. As a general rule, brain workers have the lowest birth-rates, and the unskilled manual labourers the highest, the skilled workers occupying an intermediate position. This grading also corresponds roughly with social status.

As an example, we may quote some figures from the 1911 census of England and Wales, for comparison with Australian data. Table I. gives a few representative samples, taken from the extreme ends of the scale.

TABLE I.

*Birth-rate per 1,000 Married Men under 55 Years
of Age, 1911 Census of England and Wales.*

Teaching Profession	95
Lawyers	100
Doctors	103
Agricultural Labourers	161
Dock Labourers	231
Coal Miners	232

It is true that the higher birth-rates are associated with a higher infant mortality, but this does not nearly equalise the rates of increase. The numbers of *surviving* children of the above groups are, in the above order, 88, 96, 99, 145, 191, 194.

The underlying assumption that makes this differential fertility of eugenic significance is, of course, that the intellectual workers (say, the professional class) are not only more educated, but have, on the average, a greater intellectual capacity than the average manual worker. It is impossible to enter into the great controversy that has been raised by this issue, but the proposition seems unassailable as applied to the class

as a whole. For no one of markedly inferior intelligence can gain admittance to the professional classes, and this fact alone raises the average intelligence of this class above the average of those which include all types of intelligence. Moreover, there is no doubt that our educational system tends steadily to draw the cleverer children into the intellectual occupations. Granting, then, that there is a more than average accumulation of natural talent (not merely better education) in the classes of the intellectual workers, the argument is sound that if these classes are less fertile than the rest of the population, then the average intellectual capacity of the population will decline—just as if in a flock of sheep those which produced more wool left fewer offspring than those which produced less wool, then the average production of wool by the flock would diminish generation by generation.

Thus it is of interest to see whether this phenomenon of differential fertility among the various occupational groups exists in Australia, and if so, whether it is of the same nature as in those countries which are more industrialized and in which social distinctions are more sharply drawn. Unfortunately, the data for a complete answer to this question does not exist. The Census Reports for 1911 and 1921 give the average size of Australian families according to nature of occupation, but the classification of occupations is not fine enough to be satisfactory for our present purposes. We can, however, determine from them the general trend of fertilities.

Table II. gives the average size of family in the five chief classes of occupation recognized by the Census of 1911 and 1921. The bottom line shows the percentage

which the average family in 1921 bore to the average family in 1911. Thus the average family of a professional man in 1921 was only 83% of the average size of the professional family in 1911.

TABLE II.

*Average Size of Family of Husbands Classified
According to Nature of Occupation.*

		Profes- sional.	Commer- cial.	Transport and Communi- cation.	Industrial.	Primary Producers.
1911		3.37	3.39	3.61	3.81	4.37
1921		2.80	2.86	3.19	3.27	3.96
$\frac{1911}{1921} \times 100$		83	84	88	86	91

It will be seen that the general trend is the same as in other civilized countries. There has been a general decrease in the average size of the family in all classes. Those classes containing preponderantly persons living by the exercise of their brains (Professional and Commercial) have smaller families than those containing a majority of persons living by the exercise of their muscles. Moreover, the reduction in the size of the family has been greater in the former classes than in the latter. But the classification of occupations is not of the kind to reveal fully the state of affairs. The industrial class, for instance, includes, besides the labourers, the technical and managerial staffs.

The above classification is according to the nature of the occupation. The Census reports also tabulate the same material under another grouping, namely, according to grade (rather than nature) of occupation, the three principal grades being Employer, Worker on own account but not employing others, and Wage or Salary Earner. The result of this tabulation is given in Table III.

TABLE III.

*Average Size of Family of Husbands Classified
According to Grade of Occupation.*

	Profes- sional.	Employers.	Workers on Own Account.	Wage and Salary Earners.
1911	3.37	4.32	4.47	3.46
1921	2.80	3.55	3.79	3.02
$\frac{1911}{1921} \times 100$..	83	82	84	87

This yields the surprising result (surprising in view of the experience of other countries) that the wage and salary earners have smaller families than the other two classes.

Here again it is more than possible that this result is partly due to the method of classification, especially the uniting in one class of the wage and salary earners, since the latter group contains many engaged in intellectual work. To see how far we can disentangle this factor, Table IV. has been prepared.

TABLE IV.

*Average Size of Family of Husbands Belonging to
Certain Classes and Grades of Occupation.*

	1911.	1921.	$\frac{1911}{1921} \times 100$
1. Professional, all grades	3.37	2.80	83
Employers—			
2. Commercial	3.71	3.13	84
3. Transport and Communication	4.40	3.62	82
4. Industrial	4.35	3.42	79
5. Primary Producers	4.70	4.00	85
Workers on Own Account—			
6. Commercial	3.78	3.20	85
7. Transport and Communication	4.48	3.75	84
8. Industrial	4.47	3.70	83
9. Primary Producers	4.92	4.09	83

Wage and Salary Earners—

10.	Commercial	2.92	2.59	89
11.	Transport and Communication	3.44	3.04	88
12.	Industrial	3.56	3.07	86
13.	Primary Producers	3.74	3.53	94

In this table, groups 1, 2, 3, 4, 5 and 10 may be considered to consist mainly of brain workers, while 11, 12 and 13 contain mainly muscle workers (though again including a fairly large section of brain workers). Groups 6-9 are difficult to evaluate from this point of view. Confining ourselves, therefore, to the two groups mentioned first, we still find the same result. The average size of family is somewhat greater among the brain workers than among the manual workers, the average number of children for the former being 3.91 in 1911 and 3.26 in 1921, and for the manual workers 3.58 in 1911 and 3.21 in 1921. It will be noticed, however, that the reduction in size of family in the 10 years has been much more pronounced in the brain workers than in the manual workers, the families of the former averaging in 1921 only 83% of their 1911 size, while in 1921 the manual workers' families were 90% of the 1911 standard. Consequently, while in 1911 the brain worker's family was substantially larger than that of the manual worker, in 1921 the two are practically equal, and there can be little doubt that this process will soon bring the size of the brain worker's family below that of the manual worker, and thus into conformity with the situation in the older civilized countries.

Summing up, then, we can say that in Australia the professional class has, as in other countries, a birth rate well below that of the community as a whole. The birth rate of the brain workers is falling more rapidly

than that of the manual workers, but contrary to the experience of other countries the average size of the former's family in 1921 was still about the same size as—indeed, if anything, somewhat larger than—the latter's. There can be little doubt, however, that by now (1928) the position is reversed.

III.

Whether or not it is possible to influence the physical and intellectual quality of that portion of the future population of Australia which will be descended from its present population, it is certainly possible to do so in the case of that portion of it which will be contributed by future immigrants and their descendants—and to influence it for the better if we select a good class of immigrant.

(a) *White Immigration.*

Since the United States is now approaching the completion of the process of which we are still in an early stage, namely, the populating of their country by the two methods of Natural Increase and Immigration, we may glance first at their experience of immigration in order to see if we can learn any lessons from it.

A century ago the United States was, like Australia, a vast country with a very scanty population. During the last hundred years that population has increased tenfold, and largely by immigration. About the year 1880 the character of this immigration underwent a change, so that Americans sometimes speak of the Old and New Immigration, separated by about that date. The old immigration was predominantly north-west

European (British, German, Scandinavian), *i.e.*, Nordic. The new immigration was composed mainly of Russians, Slavs, Central Europeans, the Mediterranean races and Jews. During the first fifteen years of the present century some thirteen million immigrants, mainly of these latter racial types, entered the United States. It is clear that the old American type, chiefly British in origin, is undergoing rapid and radical alteration.

About the time of the outbreak of the War the Americans were getting uneasy about the numbers and character of their new citizens. This uneasiness was inspired partly by racial, partly by economic, and partly by sentimental considerations, and culminated in the famous Immigration Restriction Law of 1921. This law limited the number of immigrants per annum from any country to 3% of the number of natives of that country resident in the United States in 1910. This law was amended by the Act of 1924, putting the annual quota of immigrants from any country at 2% of the residents in the United States in 1890. While the limitation of immigration was inspired by many considerations, the alteration of the date on which the quotas are based was definitely due to a desire to bias the immigration further in the direction of the Nordic countries. Thus the 1924 Act reduced the quotas from Great Britain, Ireland, Germany and Scandinavia from 182,812 to 132,604, or by 27.5%; the immigration from the rest of Europe, however, was reduced from 172,982 to 28,414, or by 83.5%.

In addition to this national selection, there is a personal selection of immigrants on medical and general grounds. In the countries which form the principal

source of immigration this selection is carried out in the country of origin by American doctors and inspectors sent from America for the purpose.

The preference given to those countries in which the Nordic element figures most largely (and which supplied the bulk of the early settlers in America) is doubtless partly due to a natural sentiment in favour of one's own kith and kin. It is, however, also, as is well known, partly due to a belief that the members of this race (or, rather, those containing a preponderant infusion of this race) are actually superior to the others. The "Nordic cult" has been upheld by a number of European and American writers, but American opinion was probably most influenced by the famous American Army Intelligence Tests, which were applied to one and three-quarter million recruits during the war. In these tests the foreign-born recruits derived from the Nordic countries scored more highly than the others.

This is not the place to discuss the great controversies that have been waged over the question of the efficacy of Intelligence Tests in general, and the American Army Tests in particular. The general opinion of those who have worked with them is certainly that they do serve as a rough measure, sufficient for many practical purposes, of a type of intelligence which, while not the only type, is a very important one.

Granting, however, that the Army Tests established all they are claimed to establish, it must still be admitted that a national or racial selection is much less satisfactory from the biological point of view than an individual selection. Let us accept the conclusion that certain nations have a lower average intelligence than others (or, rather, what the tests can only show, that

the emigrant class of one nation is less intelligent than the emigrant class of another). Still it must be remembered that this average is got by massing together the good, bad and indifferent, and a member of a low-grade nation who is above his national average may greatly exceed in intelligence a poor specimen of a nation whose average is high. Although where the immigration is so enormous, as in the United States, national selection may be a useful preliminary to personal selection, it must be remembered that in our case our foreign immigration is small from the point of view from which we are considering the problem. For the two years 1924 and 1925 the net non-British European immigration was almost exactly one-sixth of the total net immigration. Moreover, from a biological point of view a fair amount of heterogeneity in a population is a good thing. No doubt a homogeneous population presents fewer difficulties to governments and industrial organizations, but it has been well established that a moderate amount of diversity is biologically beneficial. And it is certainly invaluable to the intellectual life of the community.

Under present conditions, therefore, it seems that personal rather than national selection will have the most influence on the quality of our future population. Should the foreign immigration increase to more important dimensions in the future, no doubt the problem of limitation will become more acute, and we can only hope that by that time there will be more data available to show in what way the various nations differ from one another in regard to their innate qualities and capacities.

Before leaving the question of the influence of foreign

immigration on the innate quality of the future Australian population two points remain to be considered.

Firstly, it has been found in the United States that the numerical influence of the immigrant on the composition of the population is not complete with his arrival in the country. For the first generation, at any rate, he has a much higher birth rate than the native-born American. It is not possible to discover from the American vital statistics whether, and if so after how many generations, his birth rate will fall to that of the old-established American. We can safely assume that the disproportion in their birth rates will at any rate diminish, though so long as the descendants of the immigrant remain mainly in occupations of lower social status, it is probable that their birth rate will remain above the average. Hence the arrival of, say, a million Italians in America, with its population of some 120 millions, means an eventual increase of far more than one part in a hundred and twenty in the proportion of Italian blood in the population.

The remaining point which we have to consider in connection with foreign immigration is: Are the characteristics which differentiate the foreigner physically and mentally from the Australian accountable solely by differences of environment, and therefore may they be expected to disappear in the course of a few generations? Many students who have approached this problem from the humanistic side unhesitatingly answer yes. But the biologist answers no. No doubt most of the differences of intellectual equipment between an Englishman and a Russian are due to their different traditions and surroundings. But there remains a residuum of intellectual, moral and æsthetic dispositions, equally

with stature, complexion and texture of hair, which are real innate differences, not dependent on environment. These will remain, either intact or, if intermarriage takes place, as permanent ingredients in the mixture. What is the value of these residual innate differences between races after subtraction of the differences due to different physical and racial environment it is very difficult to say, but there can be no doubt of their existence. As the workman quoted by William James said, "there is very little difference between one man and another when you go to the bottom of it. But what little there is, is very important."

Let us now turn from national or racial to personal selection. The value of this is fully recognized by the Australian immigration authorities, especially in regard to assisted immigrants, who form the majority of the settlers entering the country.

In the five years 1922-1926 the total net immigration into Australia from all sources was 198,889, of which 132,026, or two-thirds, were assisted immigrants.

All applicants for assisted passages must submit to medical examination by a doctor nominated by the Migration and Settlement Office, London.² The practitioners whose services are utilized for this purpose are appointed by a conference of representatives of the various Dominions, and on behalf of all such Dominions. The doctor is required to furnish a medical certificate in respect of each applicant on a prescribed form. The standards to be observed and the methods to be adopted for the detection of the various classes of disabilities are set out in circulars issued from

2. I am indebted to the Development and Migration Commission for the information utilized in this paragraph.

time to time by the Chief Medical Officer at Australia House. The medical certificates relating to all applicants for assisted passages are forwarded to the Migration and Settlement Office, where the forms are examined. In every case in which a defect is disclosed the certificate is referred to the Chief Medical Officer for his decision. It is not, of course, possible to detail here the physical and medical standards to which the applicant must conform in order to be accepted, but experience has shown that among the principal causes of rejection are want of physical fitness, deficient height and weight, defective eyesight, deafness, mental deficiency, and tuberculosis.

Thus so far as the largest item in our immigration is concerned personal selection is provided for about as thoroughly as it could be, and its success must depend upon the thoroughness and skill with which the regulations are carried out.

(b) Coloured Immigration.

The question of the effect of coloured—especially Asiatic—immigration on the ultimate quality of the population is still more difficult to discuss, owing to the absence of reliable data on which to base conclusions. What we want to know is, firstly, would the Asiatic settled in this country reproduce at a higher rate than the white man, and so gradually come to predominate by sheer numbers, and secondly, what would be the effects of intermarriage between Asiatics and Whites on a large scale? Neither of these questions is completely answerable at present.

It is true that the Asiatic in his own country has a much higher birth-rate than the white man. For in-

stance, the Japanese birth rate in 1925 was 35 per 1000, compared with 19 for Great Britain and 23 for Australia. Would he keep this up, entirely or partly, if settled in Australia and conforming to the Australian mode of life? There is practically a certainty that his birth rate would be reduced, but we do not know whether it would be lowered to the same level as the white man's. The only country which could have information on this point is the United States, but unfortunately the information is not forthcoming. It is, indeed, possible to obtain the crude birth rate of Japanese settled in America, but this is valueless unless corrected for age and conjugal condition, and classified according to length of residence in America. Such data, however, apparently does not exist.

The effect of extensive intermarriage between Asiatics and Whites is also impossible to forecast. The mulatto or half-breed is notoriously believed to be, as a rule, an inferior being, but it is very hard to say how far his inferiority is real or how far it is due to the social handicap with which he faces life. And if the inferiority is a real one, it may be accounted for by the fact that in the past such intermarriages have been mainly between decidedly inferior individuals, at any rate, of the white race. Nevertheless, leaving aside ideal standards of excellence, there is a strong presumption that most of the coloured races would not make a desirable contribution to a population living under a civilization which has been slowly wrought out by the white race in conformity with their own particular genius. Nor does the experience of other countries with a large half-caste population encourage us to try the irrevocable experiment. And in any case, to discuss the question from

the biological standpoint is somewhat academic, since the White Australia policy is firmly rooted in sentimental, economic and political ground.

In conclusion, therefore, we may summarise the somewhat meagre results of this discussion as follows:—As regards the general eugenic problems of the multiplication of the unfit and the differential birth rate we are already in, or are approaching, the position of all civilized countries. The question of the restriction of alien European immigration is not yet an important one in the domain with which we are dealing, and in any case (from this point of view) national is far less important than individual selection, if the latter can be effectively carried out. Personal selection of immigrants is being practised, especially in regard to the major section of our immigrants, namely, the assisted immigrants. No one is in a position to say what would be the biological effects of Asiatic immigration on a large scale, though the experience of countries with a large proportion of black races in their population does not encourage us to try the experiment.

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CHAPTER VI.

RACIAL COMPOSITION OF THE AUSTRALIAN PEOPLE.

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- I. National Composition of Australian Population.
- II. Nordic, Alpine and Mediterranean Characteristics.
- III. Racial Composition of British Population.
- IV. Racial Composition of Australian Population
- V. Changing Characteristics.

I.

We are told by the Commonwealth Statistician that, exclusive of Australian aboriginals, 98 per cent. of Australia's population are British subjects by birth. This plain statistical fact is by many taken to mean that 98 per cent. are of British stock. There are even instances of publicists having interpreted the information given us by the Statistician as indicating that 98 per cent. of the Australians are Nordics.

If we divide the Australian people according to colour, and examine the census results of 1921, we find that about 98 per cent. were white, 1.3 black, .45 yellow, and .25 brown. This would appear to indicate that from the colour point of view the Australians are fast becoming a homogeneous people. The reasons for this are the decline of the aboriginals, the fact that the numerous Chinese who came here between 1854 and 1891 did not bring their womenfolk with them, and the White Australia policy.

In allocating the white population between the three branches of the white race—the Nordic, the Alpine, and the Mediterranean—we are confronted with con-

siderable difficulties, and only a rough estimate can be arrived at. The difficulty commences with the "British." These hail from England, Scotland, Wales and Ireland, whence they have migrated to many lands and multiplied. It is easy enough to calculate, according to birthplace, the percentage of English blood, of Scotch blood, and so forth, flowing in the veins of the composite Australian body, but owing to insufficient data we can scarcely make more than an intelligent guess when it comes to determine how much of the English or Scotch blood is Nordic, and how much something else.

Looking at the figures relating to place of birth, at the census of 1891, and counting the heads of those born in the various mother countries, and then distributing amongst them, *pro rata*, those born in Australia, New Zealand, and other British dominions, we find that of the white population the English represented 53 per cent., the Scotch 13 per cent., the Irish 23 per cent., the Welsh 1.5 per cent., and other Europeans 9.5 per cent.—of the latter the Germans accounted for about 5 per cent. and the Scandinavians for close on 2 per cent.¹

The figures from 1921 show a considerable falling off in migration from Ireland to Australia and an increase from England; but the number of immigrants is now too small compared with the number of native-born persons to greatly modify the proportional figures of thirty to forty years ago. At best they can only indicate the trend of racial movement.

Taking the results from 1891 as the most reliable

1. Owing to the large number of German females and their exceptionally high fecundity, the percentage of non-British Europeans may be nearer 10 per cent. than 9.5.

guide, it is interesting to study the figures for the different States:—

States.	Engl.	Scotch.	Irish.	Welsh.	Germ.	Scan.	Other Europ.	Total.
								%
N.S.W. ..	52.2	13.0	26.3	1.8	3.3	1.6	1.8	100
Vict. ..	49.1	15.7	26.5	1.5	3.3	1.5	2.4	100
Q'land ..	45.5	13.5	26.1	1.3	9.1	3.1	1.4	100
S. Aus. ..	58.2	11.0	18.5	1.8	9.0	1.2	1.3	100
W.A. (1901)	54.0	11.3	21.0	1.7	3.2	3.1	5.7	100
Tas. ..	60.0	13.5	20.0	1.2	3.3	1.2	0.8	100
Average ..	53.0	13.0	23.0	1.5	5.2	1.9	2.4	100

Owing to the heavy migration to thinly populated Western Australia in the nineties, which tended to largely influence the racial make-up of the population there, the figures from 1901 are applied to that State.

It is interesting to notice that the English element is particularly strong in Tasmania and South Australia, the Scotch in Victoria, and the Irish in Victoria, New South Wales and Queensland. The German element is strongest in Queensland and South Australia, and the Scandinavian in Queensland and Western Australia.

II.

Having determined as near as possible how much of the blood flowing in the veins of the Australian nation is English, Scotch, Irish and so forth, the next step is to analyze the blood of each of these groups.

The white race, while representing ever so many nationalities, only embraces the three sub-races—the Nordic, the Alpine (mainly Slavs),² and the Mediterranean—which is often wrongly called the Latin race. The three different sub-races have been aptly described thus:—

2. Some anthropologists make the Finns, Estonians, Latvians and Lithuanians a special sub-race, calling it the "East Baltic Race." As, however, they only differ from the Slavs by being fairer, they are here grouped with the Alpines.

Physically the true Nordic is tall and blonde, with a long head, blue or grey eyes, and fair skin. The pure-blooded Alpine is dark complexioned, with a round



FIG. 6.

skull, of medium height and heavy, stocky build. The true Mediterranean is short-statured, slenderly built, long-headed like the Nordic, but with black hair and eyes, and a skin inclined to be more or less swarthy. To visualize these race types, call to mind a typical Scandinavian for the Nordic, a peasant of Central or Eastern Europe for the Alpine, and a Southern Italian or Spaniard for the Mediterranean.

The outstanding mental characteristic of the Nordics is their restless, creative energy. In this peculiar quality they surpass not only the other European stocks, but also all other branches of mankind. For thousands of years they have poured forth from their northland homes around the Baltic, in conquering waves over Europe and many parts of Asia. Always the Nordics have been a race of warriors, sailors, pioneers, and explorers. Extremely race-conscious and politically efficient, they settled down as a ruling aristocracy in many lands. Gradually they have been out-bred, and only where they have thoroughly occupied a country, expelling or overwhelming the previous inhabitants, as was the case in England and Scotland, has the racial conquest been permanent.

The Alpines are emphatically a continental stock, taking naturally to highlands and to inland plains, and showing little liking for the sea. They are a sturdy, tenacious race, very stable, but apt to be stolid and unimaginative. They have a strong sense of group solidarity, and they cling to the land wherever they settle. The Alpines are not individually so warlike as the Mediterraneans, and far less than the Nordics. Usually their advances are slow and unspectacular, but persistent. It is a kind of peaceful penetration, and regions in Central France and Northern Italy once populated by Mediterraneans are to-day occupied by Alpines.

The Mediterranean temperament is emotional. Mediterraneans are passionate and excitable, loving and hating intensely. They are inclined to lack stability and tenacity, and neither in politics nor in war do they possess a high sense of discipline. For this reason they

have difficulty in holding their own, both against Nordics and Alpines. Strong, magnetic leaders can do great things with them, but the personal element is necessary. They have a keen sense of beauty, form, colour, and the joy of life, and particularly in the past have produced many remarkably clever men. They are quick-witted, but prone to be superficial.³

III.

Having briefly outlined the characteristics of the three branches constituting the white race, it is desirable to examine in detail the racial composition of the English, the Scotch, the Irish, and the Welsh, who together form about 90 per cent. of the white population of this country, and about 88 per cent. of the total population.

We are in this respect not concerned with the people who lived in the British Isles many thousands of years ago, and who have become known as the Piltdown people, from a fossilized skull and some bones found at Piltdown, Sussex, some years back. They were entirely different from any human beings living to-day, and became totally extinct. We commence with a Mediterranean people akin to the Iberians of Gaul and Spain, who occupied the British Isles probably more than 5,000 years ago. Their relics have been found over the whole extent of Great Britain and adjacent islands. These Mediterraneans—probably intermixed with a small strain of Alpines who had arrived before the end of the neolithic age—were in possession when under different names—Goidels, Britons, Belgæ—the Celts crossed over from the Continent and made themselves masters. The time for this event is uncertain, but has

3. *Racial Realities of Europe*, Lothrop Stoddard, pp. 11-18.

been provisionally fixed at about 400 years B.C. By some scholars the pre-Celtic inhabitants of Britain are believed to have formed the sub-stratum and larger portion of the population when, roughly at the time of Christ, the Romans poured into the country. It is generally agreed that their descendants are still with us. It was probably due to a preponderance of Mediterranean blood that for long the Celts were classified as Mediterraneans. They were undoubtedly Nordics, though it is possible their racial purity had suffered through intermixture with Alpines and even Mediterraneans before the invasion of Great Britain.⁴

The Romans, who remained in Great Britain some 400 years, are not believed racially to have influenced the British population to any noticeable degree. The legionaries were largely recruited from Nordic barbarians, and were eventually withdrawn, or the legions faded away through lack of reinforcement. During Roman occupation Nordics from the Continent commenced to visit Britain as traders, and to form trading settlements. Later on they came in greater number and took possession of the land, absorbing the native population, exterminating them, or forcing them westwards. These invaders are known in English history as Saxons, Angles, and Jutes, and until recently were believed to have come from Germany at the request of the Britons to help them against the Piets and Scots. Evidences are, however, accumulating to prove that they were not Germans. They may have been Frisians, but in all probability they were Scandinavians.

In the interval between the invasion by the Anglo-Saxons and the Vikings—more than three centuries—

4. For further information read *Ancient Britain*, by T. Rice Holmes, pp. 375-458.

there is a blank in English history; but it is almost certain that trade relations existed between the Nordics on the two shores of the North Sea. Divergencies in language and customs would naturally develop, and in one respect particularly did the cleavage become absolute and far-reaching in its consequences—the Nordics in England embraced Christianity, while those in Scandinavia still believed in Odin and Thor, and in Valhalla for the brave who fell in battle.

The invasion of England by the Vikings, which lasted from the middle of the 8th century till the first half of the 11th, falls in three distinct periods—of plunder, settlement, and political conquests. Of the three phases we are concerned here only with that of settlement.

Apart from historical records, the chief sources throwing light on Scandinavian settlement in England are place-names and personal names. Any village or town whose name ends in *by*, *dale*, *thorpe*, *wall*, *ford*, *gard*, *holm*, and so forth, was originally a Scandinavian settlement; and every person whose name ends in *son* is of Viking descent. By these means it has been ascertained that the Scandinavians settled permanently in large numbers in the part of England which in the ninth century was ceded to the Danish chieftains, Guthrun and Alfdene. The territory has become known as Danelagh, or Danelaw, through Danish law having been introduced there. The boundary of Danelagh was the Thames estuary to the mouth of the Lea (a few miles east of London), then up the Lea to near its source, then due north to Bedford, then north-westerly along Watling Street. Thus Danelagh embraced the northern Mercia, East Anglia, the greater part of Essex, and Northumbria.

The *Encyclopædia Britannica* tells us that some of the land divisions still in use in England, such as Riding, are of Scandinavian origin, and further on it says: "The highly developed Scandinavian legal system has left abundant traces in this district. We may mention specially the institution of "lawmen" whom we find as a judicial body in several of the towns in or near Danelagh. There can be no doubt that these "lawmen," who can be shown to form a close parallel to and, indeed, the ultimate source of our jury, were of Scandinavian origin. Many other legal terms can be definitely traced to Scandinavian sources, and they are first found in use in the district of the Danelagh. . . . The whole of the place-nomenclature of Yorkshire, Lincolnshire, Nottinghamshire, and Northern Northamptonshire is Scandinavian rather than native English, and in the remaining districts of the Danelagh a goodly proportion of Danish place-names may be found. Their influence is also evident in the dialects spoken in these districts to the present day. It is probable that until the end of the 10th century Scandinavian dialects were almost the sole language spoken in the district of Danelagh, and when English triumphed, after an intermediate bilingual state, a large number of words were adopted from the earlier Scandinavian speech."

The Scots at the time of Roman invasion were akin to the Britons, though the Iberian or pre-Celtic strain probably was much stronger in Scotland than in England, particularly in the north and west. Tacitus' description of the Caledonian tribes makes them Nordics. Comparisons of skulls and other physical features undertaken between Highland students and Norwegian re-

cruits drawn from the Trondhjem district show great similarity; but the darker pigmentation of hair, eyes, and skin of the former points to an intermixture of Mediterranean blood. We may, therefore, assume that in Scotland—as undoubtedly also was the case in Ireland and the western portion of England, particularly Wales and Cornwall—lived a mixed population of Nordics and Mediterraneans when the Vikings appeared.

The Vikings settled permanently in the Orkney Islands and the Shetland Islands earlier than in any other part of the British Isles, these islands forming part of Norway till 1469. In that year the daughter of the then King of Denmark and Norway, Christian I., was married to King James III. of Scotland. King Christian being unable to pay the dowry agreed to, handed the Orkney Islands and Shetland Islands over to King James as security, and the dowry never being paid, the Scots kept the islands.

The old Norse speech was still spoken there by a few people until the end of the 18th century. Place-nomenclature is almost entirely Norse, and the modern dialects are full of Norse words. From the Shetlands and Orkneys the Norsemen crossed to the Scottish mainland. Sutherland, Caithness, Ross and Cromarty are full of Norse place-names, and Norse influence may be traced even further south.

The Hebrides were also largely influenced by the Norsemen. Together with the Isle of Man, they formed a Norse kingdom down to the middle of the 13th century. Many of the islands themselves and their chief physical features bear Norse names; many personal names are of Norse origin, and there are many Norse words in the Gaelic, both of the islands and the main-

land. In the Isle of Man, too, much bears testimony to Norse settlement, including a number of runic inscriptions and the Manx legal system.

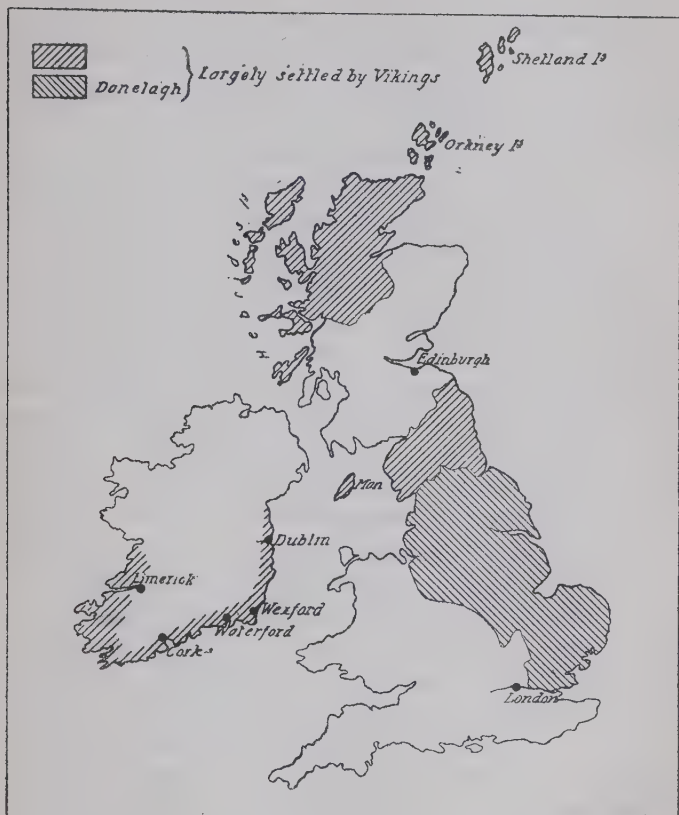


FIG. 7.
Map of British Isles, showing Danish and Viking Settlement.

In Ireland the Scandinavian influence was concentrated in the great coast towns—Dublin, Wexford, Waterford, Cork and Limerick—and the districts im-

mediately around them. Irish place-nomenclature bears very definite witness to this fact. There was free intermarriage between the Scandinavians and the Irish, but the strength of the clan system kept the races distinct, and there was no such infiltration of the whole population as for instance took place in the English Danelagh. This system prevented settlement upon their own farms, as took place in England, and the invaders lived almost entirely in the coast towns and the districts in their immediate neighbourhood, busying themselves with trade and shipping, and giving the impetus there, as elsewhere, to town life. Mr. Allan Mawer, in his excellent little book, *The Vikings*, from which much of the information contained in the above is taken, tells that Scandinavian influence, as a political force, declined after 1014. In that year, at Clontarf, the Scandinavians and the Irish engaged in the greatest battle ever fought on Irish soil, to decide who were to be masters in Ireland. The Scandinavians were beaten; but nevertheless they remained a strong element in the towns, right down to the English invasion in the 12th century, and in the case of Dublin there can be no doubt that it was the Scandinavians who made it the capital city of Ireland. Later the Nordic element in Ireland was strengthened by a large number of Scottish families settling in Ulster, and by a number of English settling in other parts of Ireland, and to-day a distinction is made between Celtic Irish,⁵ Ulstermen, and Anglo-Irish.

On the other hand, a large number of Celtic Irish, since the advent of modern industrialism in England, have settled in English manufacturing centres, and now constitute a considerable part of the population there.

5. "Pre-Anglo-Saxon" would be a better term than "Celtic."

There is still to be mentioned the strengthening of the Nordic strain in the British Isles by the Norman invasion in 1066. Norman is a softening of the word Northman, and the Normans were descendants of Scandinavians who had conquered and settled in Normandy in 911. During the century and a half which passed until the conquest of England took place, the Normans were adopting the French language and culture, but their racial strain and characteristics were unimpaired. After the Conquest, Normans were scattered throughout England, and were even settled, though in smaller numbers, in Scotland, Ireland and Wales.

From the foregoing condensed outline of the racial origin of the British people it would follow that the English and the greater part of the Scotch are predominantly Nordics, and that the Celtic Irish, the Welsh, and, to some extent, the Highland Scotch—all largely hailing from the pre-Anglo-Saxon inhabitants—contain an unmistakable element of Mediterranean blood.

Perhaps we are not far wrong in assuming that the number of Anglo-Saxons in Ireland equalises the number of pre-Anglo-Saxons in England and Scotland, that 50 per cent. of the latter are Nordics and 50 per cent. Mediterraneans, and that the Alpine element is so small that it may be ignored.

IV.

Returning to the racial make-up of the Australians, which is the main object of this essay, there still remains to clear the ground regarding the race of the white element of non-British descent in this country. Based on such data as are available, and not forgetting that no absolutely pure race exists anywhere in Europe,

it may be roughly assumed that the Scandinavians and Dutch are 80 per cent. Nordics and 20 per cent. Alpines; the Germans, Austrians, Swiss, and Belgians, 30 per

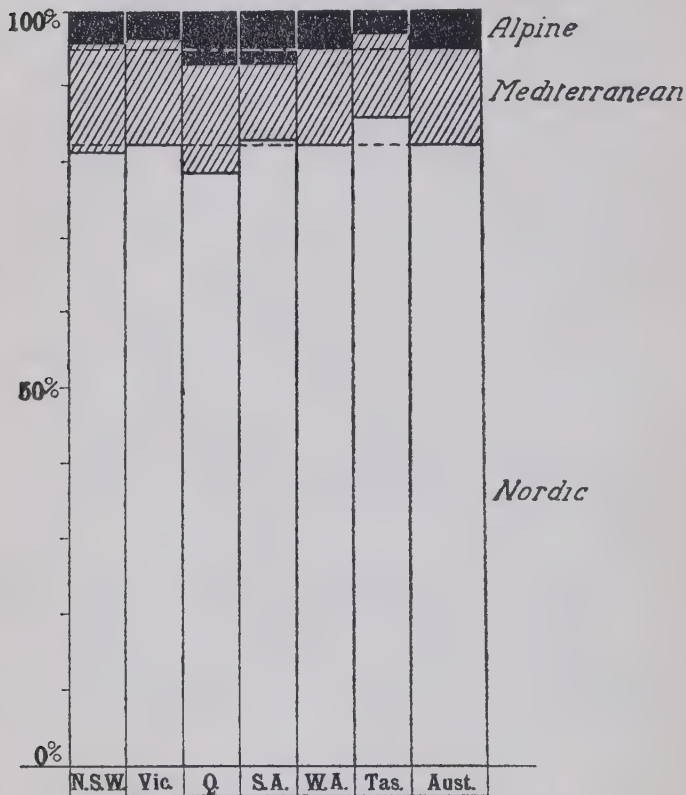


FIG. 8.

cent. Nordics and 70 per cent. Alpines; the Italians and Greeks, 50 per cent. Alpines and 50 per cent. Mediterraneans; the French, 25 per cent. Nordics, 50 per cent. Alpines, and 25 per cent. Mediterraneans; the Spanish,

Portuguese, Maltese, and Jews, 100 per cent. Mediterraneans, and the remainder Alpines.

Assuming the above proportions to be approximately correct, and applying them to the census figures for 1891, we find that about 82 per cent. of the white population in Australia is Nordic, 13 per cent. Mediterranean,⁶ and 5 per cent. Alpine.

As suggested in a previous table, the racial composition varies in the different States. Thus in Queensland the Nordic element falls nearly 4 per cent. below the average for Australia, while the Mediterranean is 2 per cent. above, and the Alpine 2 per cent. above. In Tasmania it is just the opposite, the Nordic element being about 3.5 per cent. above the average, the Mediterranean 1.5 per cent. below, and the Alpine 2 per cent. below.

The uneven distribution of racial strains may explain some States moving more peacefully forward than others. It may make us wise with regard to some places being backward in economic progress and others being more advanced. And it may also in some measure explain why the Australians, taken as a whole, are an intensely sports-loving people, somewhat deficient in discipline, and over-fond of gambling.

The Nordic race, which is so strongly represented in the Australian people, have always been fond of sport and enthusiastic admirers of athletic prowess. According to an Icelandic saga, the youthful King of Norway, Olaf Trygvason, was the foremost in sport of his day. The Norse mythology pictures the heavenly abode as a place of endless sport.

6. It is possible that the percentage of Mediterraneans is rated too high and that of the Nordics too low; but as a tentative solution of a difficult problem the figures may be allowed to stand.

In the Nordics, too, the gambling instinct is conspicuous. Tacitus after having related about their sports tells of the old Germans, who were true Nordics:

"Strangely enough, they make games of hazard a serious occupation, even when sober, and so venture-some are they about gaining or losing that, when every other resource has failed, on the last and final throw they stake the freedom of their own person."

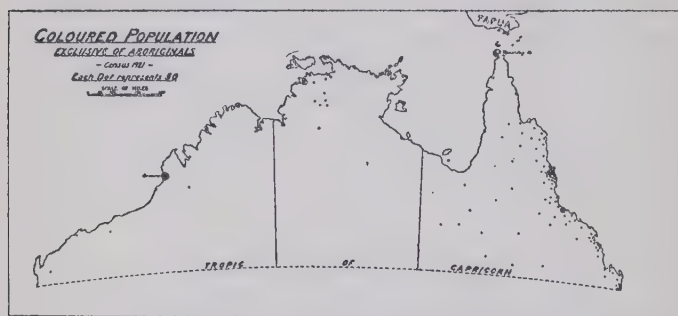


FIG. 9. Distribution of Coloured Population, excluding Aborigines. Each dot represents 50.

To the Mediterraneans—who include the Jews—gambling is less a game of chance and more one of business. The Nordics supply the “punters” and the Mediterraneans the “bookies.” Between them they keep the wheel of fortune in rapid, perpetual motion.

Finally the general deficiency in discipline may perhaps to some extent be traced to the influence of the 13 per cent. Mediterraneans, who, as already stated, are less amenable to discipline than are the Nordics and the Alpines.

V.

Having dealt with the present population of Australia, it is of interest to speculate on future racial

development. In so doing it is assumed that no untoward happening of a radical nature affects Australia's destiny.

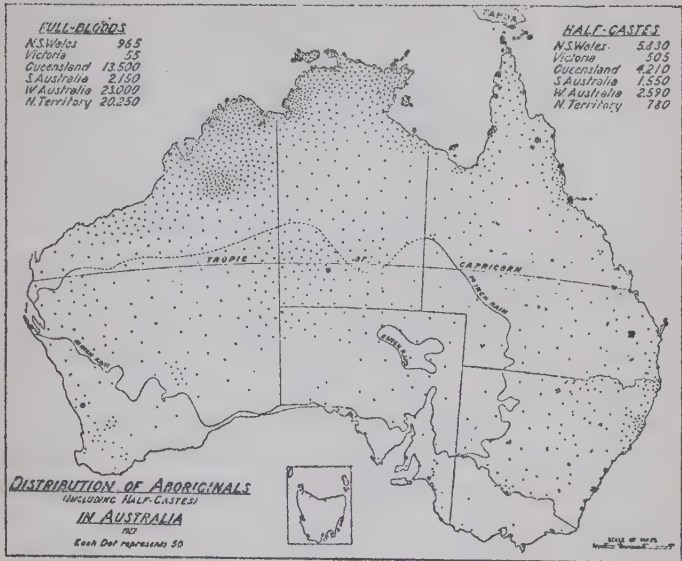


FIG. 10. Distribution of Aborigines, including Half-castes. Each dot represents 50.

Amongst the forces which influence the human material in any particular place, climate, food and immigration are considered the most important. In temperate Australia all these three factors favour the white race, consequently it may be concluded that the southern States will always remain white. A gradual modification of the fair, blond Nordic type towards the Mediterranean type seems, however, inevitable, except perhaps in Tasmania and part of Victoria.

In the north the position is different; there both the

climate and the present racial composition hold out promises to a dark-skinned population, resembling, maybe, the Berbers of North Africa, interspersed with an element of negroid blood.

Dr. Cilento, Director of the Australian Institute of Tropical Medicine, in a valuable book, *The White Man in the Tropics*, published by the Commonwealth Government in 1925, takes great pains in proving that the white race quite well can populate tropical Australia. He points out that it is actually being done in North Queensland, and that the reasons for the white race not having established itself to the same degree in the Northern Territory and tropical Western Australia must be sought in economic handicaps.

Meanwhile a change is taking place in the make-up of the white man in these regions of Australia. Dr. Cilento was for years stationed in Townsville. He knows the people of the north; therefore the following opinion regarding the modification of type is of singular interest:—

“ . . . Climate and environment undoubtedly modify considerably. . . . Already the Australian has gained a definite feature type, and different parts of Australia are producing local strains. There is, indeed, beginning to be a very definite type of North Queenslander, or tropical-born Australian. He is tall and rangy, with somewhat sharp features and long arms and legs. . . . He moves slowly, and conserves his muscular heat-producing energy in every possible way. . . . The hair colour is darkening, black, dark-brown and red hair being increasingly frequent in long-settled localities. There is, moreover, a pallor of the skin which produces most per-

fect feature-types in dark-haired women, though it is unkind to the fair-haired, and gives them a freckled and faded appearance. . . . The race is in a transition stage."

It is evident that in the north the movement towards a dark type-norm is in progress. Dr. Cilento, however, has apparently taken into consideration the effects of climate only, whereas the present racial composition in these parts must act as a leaven of some potency, tending to produce a darker race.

Examining the census figures from 1921, we find that there were in that year about 100,000 Europeans north of the Tropic of Capricorn, 96,000 being in Queensland; and 8,500 Asiatics and Pacific Islanders. In addition, the aborigines numbered approximately 50,000. Roughly the whites represented 63 per cent. of the total population, the blacks 31 per cent. and the yellows and browns 6 per cent. It is unlikely that of pure-breds the racial proportions have notably altered since.

Such are the contents of the melting pot in tropical Australia. We may now consider how the different ingredients act and react on each other.

Owing to the high temperature and the steady inflow of Southern Europeans, the whites are getting slightly darker from year to year. The 8,500 Chinese, Japanese, Malays, Melanesians, Indians, etc., are overwhelmingly males, and freely cohabit with aboriginal females, as, indeed, do many Europeans, there being a dearth of white women. While it is probable, though not certain, that also in the north the full-blood aborigines are declining, there is no doubt that half-castes and quarter-castes of the most diversified blend are increasing from month to month.

Imagine these forces of nature in operation for, say, 20 generations—less than 500 years—and it is, indeed, difficult in the end to visualize anything but a coloured population in tropical Australia.

CHAPTER VII.

THE URBANISATION OF AUSTRALIAN POPULATION.

By E. T. McPhee, Commonwealth Bureau of Census
and Statistics.

- I. The Movement in Various Countries.
- II. Causes of the Decline of Rural Population.
- III. Effects of the Movement on Social Welfare.
- IV. Economic Considerations.

I.

1. The increasing proportion of the population of Australia living in the cities as compared with the proportion in the rural areas is so frequently referred to, and the movement is so generally deplored, that an attempt has been made in the following pages to impartially examine the matter. The subject has been considered from the following aspects:—

1. Has the movement been confined to particular countries?
2. What has been the cause of the movement?
3. Is the movement detrimental to the social welfare?

1. In an appendix hereto some tables are given showing, for England and Wales, the United States of America, Germany, and Australia, the numbers and the relative proportions of their respective populations living at successive periods, in rural and in urban areas.

As it will be shown that the movement of population from rural to urban areas has been due to change in the occupations of the people, tables indicating the proportions of the populations which have been employed from time to time in primary industries are given also.

2. *England and Wales*.—The tables referred to show that in 1851 the population of England and Wales was almost equally divided between urban and rural divisions, whereas by 1911 the proportion in the rural areas had shrunk to 22 per cent., urban residents representing 78 per cent. During the same period the actual number of persons engaged in agriculture and forestry declined from 1,712,739 in 1851 to 1,291,828 in 1911—from 9.6 per cent. to 3.6 per cent. of the total population.

3. *Germany*.—In Germany the rural population declined from 64 per cent. of the whole in 1870 to 40 per cent. in 1910. In 1882 the numbers engaged in agriculture, forestry, and fisheries represented 43.4 per cent. of all breadwinners, as compared with 32.7 per cent. in 1907, though the actual numbers concerned increased during the period by 20 per cent.

4. *United States of America*.—In the United States of America, as recently as 1900, the rural population was 50 per cent. greater than the urban, but in 1920 the urban population was the greater by about $5\frac{1}{2}$ per cent. During the same twenty years the number engaged in the agricultural and pastoral industries increased by about 16 per cent. only, while the number in other occupations increased by nearly 60 per cent., with the result that the proportion of the population engaged in the primary industries fell from 35.7 per cent. to 28.9 per cent. of all persons engaged in gainful occupations.

5. *Australia*.—For Australia as a whole the data for

a comparison, over an extended period, of the proportions represented by the population of urban and rural divisions are not readily available. In 1911 the population living in urban areas numbered 2,560,766, or 57.5 per cent. of the total, by 1921 the population of such areas had increased to 3,370,316, representing 62 per cent. of the total. A comparison of the occupations is possible over a more extended period, and the results show that, though the numbers engaged in primary industries almost doubled between 1871 and 1921 relatively to all breadwinners, they fell from 44 per cent. in 1871 to 25.8 per cent. in 1921. Notwithstanding this relative decline, the *number* of persons living in the rural areas is greater than ever before.

II.

1. *General.*—In attempting to find the cause of the relative decline of the rural population—as in many other matters—the effects of purely local influences are frequently exaggerated, and symptoms are often mistaken for causes. In its report to the Victorian Parliament in December, 1918, the Select Committee, which had investigated the *Drift of Population from the Country Districts* of Victoria, gave the following causes as those which “may be regarded as the main”:—

1. The decline of gold mining.
2. The scarcity and want of continuity of employment.
3. The closing of small industries and the removal of larger ones from country centres to the metropolitan area.
4. The better opportunities for employment at higher wages and under better conditions in the city.

5. The lack in country districts of various trades at which young men could become skilled workmen.
6. The neglect in the development of country resources.
7. The impediments to the occupation of land in mining districts by old-time restrictions and objections.
8. The want of systematized rural organizations.
9. The general dullness of country life.

This list of causes has been set out in full because it is fairly representative of popular opinion on the subject.

Causes numbered 2, 3, 4, and 5 are obviously symptoms of some deeper cause. With the exception of number 9, the others are purely local causes, which, in view of the existence of the same phenomenon in other countries, are insufficient for a satisfactory explanation. The cause which has been reserved for the last, viz., "the general dullness of country life," is, perhaps, the one most frequently put forward and most generally accepted in Australia and elsewhere, and numberless suggestions have been made for the amelioration of the life of the dweller in the country.

To put forward such a cause, however, is to assume that numbers of people can change their abode—and necessarily, in many cases, their occupation—at will, and to ignore the necessity for some other employment for them at the place where they elect to live. On consideration, it must be obvious that people cannot voluntarily migrate in numbers from the country to the towns unless the towns have some employment for them. On the other hand, people will not remain in the country

—no matter what entertainment may be offered to them
—unless the country can furnish them with a livelihood equal to or better than that which is available in the towns.

It is apparent, therefore, that the factor which is responsible for the smaller proportions of the peoples in the rural areas of industrially organized countries is the factor of remunerative employment, and it remains to be shown why relatively less people are now engaged in the primary industries than formerly. As by the weight of numbers the agricultural and pastoral industries dominate the primary or rural group, particular attention will be devoted to those industries.

The relative numbers of persons engaged in various industries represent the division of labour necessary to satisfy the diverse wants of humanity. When observation is restricted to a single country the necessary relation between the various classes of industry is likely to be obscured, because the division of labour is extended beyond the boundaries of any one country by the transfer of the products of labour from one country to another in exchange. It may be mentioned here that, while in England and Wales the number of people engaged in agriculture has actually declined, in Australia the numbers have continued to increase, though at a lower rate than the total population. From the fact that the same movement is observed in two countries, which differ so widely in their industrial development as England and Australia, it may be safely assumed that the movement is general throughout all countries having any pretence to organized industry, and that the primary cause is common to all. The more pronounced change in England is due to the fact that

supplies of agricultural produce are largely drawn from external sources, whereas the much more moderate change in Australia is because Australian agriculture is engaged in providing for the requirements of people outside Australia. Thus it is apparent that the intensity of the phenomenon in different countries varies broadly with the degree of their industrial development. Between the extremes represented by England and Wales on the one hand and Australia on the other, is the United States of America, which of all industrial countries is, perhaps, the most nearly self-sufficient for the supply of all the wants of its people, *i.e.*, its primary and secondary industries most nearly approximate the equilibrium in the division of the labour of the nation. Consequently the changes which have taken place in the United States will probably furnish the most satisfactory demonstration of the fundamental cause sought for.

2. *Experience of the United States.*—On the basis of the average production of the principal crops and of wool during each of the years in the decades 1876-1885 and 1912-1921, the agricultural and pastoral production increased in quantity by about 120 per cent., but the number of persons engaged in this production increased by about 50 per cent. only. Hence, during the 35 years the productivity of each person engaged in these industries increased by about 45 per cent. On this experience, therefore, a self-contained community, whose numbers were constant, would require 30 per cent. less people on the land in the later than in the earlier period. In the United States the number of persons engaged on the land declined during the period referred to by about 34 per cent. in relation to the total breadwinners.

3. *The Primary Cause Stated.*—What has happened in the United States has happened, and is happening to a greater or less degree, in every progressive country, *i.e.*, the supply of food—which engages by far the greater part of the rural population—requires the labour of a continuously diminishing *proportion* of the community. The primary cause of the decline of the rural population in relation to the urban population would, therefore, appear to be that, though the productive power of each *individual* engaged in the production of food has increased, the food requirements of the average individual consumer have not varied, consequently there has been a continuous release—from the necessity of producing food—of labour which has been applied to producing the means of gratifying the unlimited wants of a less primitive kind.

4. *The Primary Cause Discussed.*—Increased power of production from the land is the combined result of several contributing agencies, such as the substitution of human labour by machinery; the hybridization and careful selection of food grains, leading to the propagation of higher quality, of quicker maturing, and disease and drought resisting varieties; the use of chemical fertilizers; the improvement in breeding of farm animals; and the general improvement of farming methods as the result of scientific research and experiment.

The net result of these agencies is apparent from the experience of the United States, and, although it is not possible to allocate to each agency its share of the result, it is of interest to note the great extent to which human labour in agriculture has been supplemented by machines. In the *Statistical Abstract of the United*

States (1921, p. 151) the value of implements and machinery used on farms at decennial periods from 1850 to 1920 is given as follows:—

	Dollars.
1850	151,587,638
1860	246,118,141
1870	270,913,678
1880	406,520,055
1890	494,247,468
1900	749,775,970
1910	1,265,149,783
1920	3,594,772,928

In 1870 there were 5,919,993 persons engaged in the agricultural, pastoral, and dairying industries, and in 1920 the number engaged was 10,661,060, so that in 1920 the labour of each person employed was supplemented by capital instruments to the value of about 340 dollars, as compared with 45 dollars in 1870.

Assuming an increase of 50 per cent. in prices over the fifty years, the mechanical units of force applied to the assistance of the agricultural worker were multiplied five times. Though the fact is of little importance in its immediate effect on the relative numbers employed in agriculture and in all other industries, it is interesting to notice that the persons engaged in making these mechanical aids to agriculture are themselves really food producers, though they chiefly live in cities, and, in many cases, outside the country whose agriculture they are assisting.

There has, of course, been, perhaps, a greater application of mechanical appliances to other industries than to agriculture, and the amount of human labour necessary for a given output from those industries has been

correspondingly reduced. So far, then, as the power of production is concerned, the relative numbers engaged in the two classes of industries might have been undisturbed. The essential difference, however, is in the limited demand for the products of agriculture and the unlimited demand for the diverse products of all other industries. As has already been stated, the capacity of each individual, and so of any constant number of persons, to consume primary food substances (the greater part of all primary production) is limited, whereas the capacity of a community of constant number to use the product of labour in its diversity of forms is practically unlimited. If, therefore, we consider the case of any community which is self-sufficient for all its requirements, or what is the same thing, if we consider the world as a whole, it is obvious that so long as the productive power of the farm worker continues to increase, such workers will be a declining portion of the community.

Although this primary factor of increasing capacity is operating in every progressive country, attention is distracted from its effect on the labour required by different industries in individual countries by more apparent agencies which, however, merely affect the separate countries as competitors for international trade, but which do not affect the proportion of their collective populations which must be engaged in agriculture.

For instance, it may be supposed that in a country such as Australia the proportion of agricultural producers could be increased *indefinitely* by exporting their produce in exchange for other requisites, notwithstanding the increasing capacity of the individual producer. This, however, might not be so. Unless the free or

spontaneous movements of trade is diverted by political devices (tariffs, bonuses, subsidies, etc.), the world's market—that is, the requirements of those countries which do not provide sufficient food for themselves—will be supplied by those other countries which can deliver at the lowest price. The ability of any country to compete in external markets will depend on its capacity to produce with profit at a cost not greater than the cost of production of that part of the necessary supply which is produced under the least favourable conditions.

If, therefore, from any cause—whether it be from the extension of operations to inferior lands, from higher wages, cost of implements, transport, or from any other charge which must be borne by the producer—the cost of production increases more rapidly, or diminishes less rapidly, in one of the competing countries than in the others, that country which fails to keep up with its competitors will be forced from the market. Consequently, so long as the general capacity to produce remains undiminished no country can increase the *proportion* of its people which is engaged in agriculture unless in some other country a corresponding transfer of labour is made from agriculture to other industries. The countries which will supply the world's markets for foods will be those which can produce foods at the lowest cost, and, at the same time, employ labour in agriculture more profitably than in other industries.

Factors which affect countries in their competition with other countries may hasten or retard, in any country, the effect of the primary cause, but they are subsidiary, nevertheless.

III.

1. *Few Cities versus Many Towns.*—If the cause of the movement as stated above is the true one, it is apparent that so long as the productivity of labour devoted to agriculture continues to increase an expanding proportion of the labour of the community will be devoted to secondary industries, which, until some radical change in industrial organization occurs, must be carried on in towns or cities.

The question then arises whether it is to the best interests of the community that the secondary industries should be concentrated in a comparatively small number of large cities, or should be more widely distributed throughout a greater number of smaller towns.

In England there is a force of opinion advocating the establishment of new factories on sites in country centres, so that the towns, which it is proposed to limit in size, may be planned to avoid the defects of existing cities. This is intended to prevent any further accretion of population to those cities which, by their great size, are considered to be a menace to society.

In Australia the inclination is probably more towards the establishment of industries in existing provincial towns, many of which are stationary or decadent, with the object of keeping the families of these towns together, and of preserving the value of property therein.

The subject is many sided, and if the charge of comparative unhealthiness and immorality laid against the big cities is proved, the question is not free from conflict between the purely material and the hygienic and moral interests of the community, and between the interests of different sections of the people. As it is not possible to weigh these various interests—which rela-

tively vary according to circumstances—and to declare on which side the balance of advantage lies, what has been attempted here is to set out some of the more important aspects of the subject. A proper treatment of the matter would involve excursions into the realms of town planning and eugenics, which, however, cannot be made within the limits of this paper.

2. *Menace to Health Alleged Against Big Cities.*—Those who denounce the big cities, and advocate a return of population to rural districts, generally allege that life in big cities is less healthy than in the smaller towns, and leads to physical degeneracy, accompanied in many cases by moral degradation.

In the earlier years of the “Industrial Revolution” (which, by the way, has made possible the conditions now under consideration, *i.e.*, the relatively smaller number of primary producers required to satisfy the primary wants of a community) the impetus to secondary industries was so great that towns grew rapidly and in such a haphazard manner that many evils arose, amongst them low wages and defective housing. With the experience of a century behind us, and with the change of social sentiment in the direction of public hygiene and social welfare generally, it should not be impossible to make appreciable improvements on existing conditions, which, no doubt, still leave much to be desired in small towns as well as in large cities. The followings remarks by Professor Marshall are interesting, and instructive with regard to the standard of the worst houses of to-day compared with their counterparts of the past.

Professor Marshall, writing of conditions in England thirty years ago, says:—“The modern suburban arti-

san's cottage contains sleeping accommodation far superior to that of the gentry of the Middle Ages, and the working classes had then no other beds but loose straw reeking with vermin and resting on damp mud floors. . . . It is undeniable that the housing of the very poorest classes in our towns now is destructive both of body and soul, and that with our present knowledge and resources we have neither cause nor excuse for allowing it to continue, and it is true that in earlier times bad housing was in so far a less evil than now, as those who were badly housed by night had abundant fresh air by day. But a long series of records, ending with the evidence of Lord Shaftesbury and others before the recent Commission on the Housing of the Poor, establishes the fact that all the horrors of the worst dens of London had their counterpart in worse horrors of the lairs of the lowest stratum of society in every previous age."¹

It is obvious from this that the modern big city has produced nothing new in the worst evils of housing. It is not so certain, however, that the fresh air mentioned by Professor Marshall was so very fresh as to provide an antidote to the "humours of the night." With the absence of sanitary methods for the disposal of waste matter it appears improbable that the air in the precincts of habitations would be fresh; if by fresh we mean pure. However, Professor Marshall was undoubtedly right when he said that "there is neither cause nor excuse for a continuance of the present conditions."

The feature which most often provokes condemnation of the big city is its slums, but it is well worth considering whether the big city is more blameworthy in this

1. *Elements of Economics of Industry*. Fourth edition, p. 334.

respect than the provincial town, or even than the countryside. Although the latter have not the complete slum, they have all the ingredients from which a slum is made.

The slum is merely evidence of poverty, and poverty exists in the smaller towns and even in the purely rural areas, the great difference being that in big cities, the poor—largely the degenerate and the unfit—gravitate to the dilapidated areas where, by their numbers, their condition is forced under notice. There are in country villages and in the open rural spaces many hovels used as dwellings which would not be permitted in any city with a supervising health authority. Eliminate poverty and slums will disappear. The problem of poverty is not confined to big cities or to towns of any size, and there is some reason for believing that the charity organizations of the towns often attract the poor and degenerate from the country. It is not the purpose of this paper to discuss the problem of poverty, but in considering the relative merits of life in small or large towns it is desirable to understand clearly that poverty is the result of a system, or lack of system, in the social and industrial organization. So far as it is due to unemployment as a consequence of defective industrial organization, the advantage seems to be on the side of the big city, where there is a greater probability of the transfer of labour from establishments or industries which are discharging hands to others that are busy, than in smaller towns where the variety of employment is not so great. So far as it is due to the social system, which permits the propagation of the physically and mentally unfit, who are by no means the exclusive product of big cities, it is immaterial whether the unfit

are in the towns or in the country, but there can be no doubt that, as the number of the unfit are reduced, there will be fewer slums in the cities and less poverty everywhere. Moreover, aliens from countries having a low standard of living furnish a large section of the slum dwellers. These are a class apart, and their condition cannot be charged to their present environment.

Apart from the extreme cases of physical and mental degradation which make up so large a part of the population of the dilapidated areas of cities, fears have been expressed that the congestion of population in cities will induce a general decline in the average physique and stamina of the people.

It is difficult to compare satisfactorily the general health of the city, the town, and the country, owing to the migration of cases of sickness and to the transmission of causes, but it is probable that hitherto the country has had some advantage in this connection. Development in the science of industrial hygiene and public health generally, and their wider application will, no doubt, further improve the health of cities and towns, and so tend to reduce the margin between town and country. On the other hand, with the extended use of the tractor cultivator, the mechanical harvester, stacker, and so forth, the rural worker will be relieved of much of the hard work which has given him his physique, and will become more and more a mechanic and machine operator. On both sides, therefore, it may be expected that the conditions of work will tend to a greater similarity. Mr. Henry Ford, of motor car fame, predicts that in the

With physical training of children in schools, with gymnasia, sports, and games for the adolescent, with satisfactory lighting and ventilation of shops, offices, and workrooms, supplemented by adequate reservation of open spaces for playgrounds and gardens, any general physical degeneration does not appear to be inevitable. It appears rather that under conditions which, with our present knowledge and wealth producing capacity properly applied, should not be unattainable, it would be possible to rear a race of city workers equal in stamina and physically and mentally more alert than the average agricultural labourer.

If, ultimately, there is some sacrifice in longevity, it must be considered as a payment for the higher standard of the "fuller" life which the majority of us are striving for, and which has been made possible by the invention of machinery and its use in the factory system.

In the foregoing the conditions of the city have been contrasted with those of the country. So far as there is any effective choice, however, it no longer lies between the city and the country, but between the big city and the smaller city or town. The factory laws will be the same in each of these places, and so we must assume will be the building laws. So far as the industries are identical in each locality, dust, noise, and other detrimental attributes will have the same effect on the individual worker, irrespective of the size of the community of which he is a member. In this connection the advantage will probably be with the big city, because its greater numbers can better afford the best professional skill and other requisites for the conduct of its health and other communal services, which are likely, therefore, to be better and cheaper than in a small town.

2. *Demoralizing Effect of Big Cities.*—What has been said about the comparative health in the city and in the country applies largely in the matter of morality. No satisfactory comparison can be made.

3. *Economic Loss from the Congestion of Traffic.*—Next to its alleged menace to health, the most serious objection raised against the big city is the economic loss due to the slowing down of transport by the congestion of traffic. To obviate this, and other alleged disadvantages, it has been proposed that the population of any urban centre shall be limited. Any population, above the prescribed limit, which, if unhindered, would attach itself with the related industries to the existing city, is to be settled in some rural locality more or less distant. In connection with such a proposal it should be remembered that the internal commerce of a country—the most important part of its total business—consists of the interchange of services between its individual citizens, and that these interchanges will take place whether the cities are contiguous, as are the component cities included in Greater London, Greater New York, or Greater Sydney, etc., or whether they are some distance apart. Under which of these conditions will the interchanges be most economically conducted? The advantage would appear to be with the big city, because while there may be some congestion of traffic, it is generally confined to a comparatively small area, and congestion in a limited area, however serious it may appear to be to those who have to submit to the delays in traffic movements, affects only a very small proportion of the people, and a smaller proportion of the commercial transport of the neighbouring community. At a short distance from the hub there is free movement

in all directions. Goods may therefore be distributed direct from the factory in one city to the shop in another city which is adjacent. If, however, the town containing the factory is even fifty miles from the storekeeper in another town, railway or sea transport, with the consequent extra handling of goods, would be necessary. The economic loss involved in the proposal to have many small towns in preference to fewer large cities is at once evident if we imagine the business now done amongst the people of Greater New York being carried on amongst the same people divided into communities of moderate sized towns dispersed in different directions into rural surroundings. It should not be impossible to provide all open spaces essential to recreation—so placing the big city on an equality with the smaller one—without submitting to the economic loss involved by widely separating populous localities.

Intimately associated with the traffic in cities are the complementary factors of railway and tramway fares and house rents. With reference to town rents, Professor Marshall pertinently says: "And it must be remembered that those who pay the high town rents get in return the amusements and other advantages of modern town life, which many of them would not be willing to forego for the sake of a much greater gain than their total rent."

4. *Evidence of Some Economic Advantages from the Location of Industries in Big Cities.*—The fact that so many astute business men establish their industries in big cities in preference to smaller centres, where ground rents would be cheaper, is in itself *prima facie* evidence that some advantage is expected from such a location. Evidence of such an advantage is also given in the

following extract from the report referred to in the early part of this paper:—

“The establishment of secondary industries in country centres shows no sign of expansion. On the contrary, there has been a closing down in numerous centres of small industries, and in several instances the transference of large ones to the metropolitan area, involving the removal of many families to the city. The view generally held and expressed is that the failure to develop and retain inland industries is due to railway freights. This is not fully supported by the evidence tendered, the proprietors of important manufacturing concerns now conducted in Melbourne, but formerly carried on in the country, declaring that even if the raw material and manufactured goods were carried for nothing they would not remain in the country.”

In evidence given in New South Wales before the Royal Commission on New States, it was said that “industries were being closed in the north (of New South Wales) and removed to Sydney.”²

These removals from the country to the cities are often indefinitely ascribed to some sinister influence of “vested interests” in the cities. It is not uncommon for “vested interests” to be made the scapegoat when the cause of any economic phenomenon which does not commend itself to public opinion is not obvious, but in view of the evidence quoted above it would be well for those who advocate the establishment of industries in country centres (especially in inland towns of Australia) to inquire closely into the causes of the transfers referred to.

The unobtrusive influences responsible for these

2. *The Argus*, Melbourne, June 5th, 1924.

transfers are, no doubt, those referred to by Mr. D. H. Robertson when he speaks of the "localization (of industries) which, whatever its cause, is continued from force of habit and from the miscellaneous but solid benefits which it confers."³

IV.

1. *Economic Advantages.* — (a) *Interchange of Workers.*—In a big city with a number of common industries there are opportunities for workmen who are dissatisfied with the conditions in one factory to change to another. For the unskilled worker the opportunity for change is greater, as he can frequently change from one industry to another. These conditions create a competition for the services of superior workmen, whereas in a smaller town, where the factories are few, a dissatisfied workman has no alternative but to move to another town; if he has a family the cost of moving might be such as to compel him to suffer his discomfort. As has already been mentioned, too, in a big centre, with a multiplicity of industries, there is always a possibility that when some are slack others may be busy, so reducing unemployment to a minimum.

(b) *Accessory Industries.*—A large aggregation of factories in one centre offers inducement to the establishment of other special industries to make and repair their machinery and other requisites, and also to the establishment of subsidiary industries to treat their by-products. On the other hand, in a small town, it may be necessary for a factory to undertake its own repairs or send the damaged parts to some distant town. In either case the cost would place such a factory at a

3. *The Control of Industry*, p. 27.

disadvantage as compared with one in proximity to expert workmen properly equipped for the necessary work. Also, the by-products of an isolated factory would probably be insufficient to warrant the capital outlay necessary for their treatment, and so a possible source of income to the business and wealth to the community would be wasted.

(c) *Advantage from Location in a Seaport.*—To meet open competition it is in most cases necessary for a factory to be on such a scale that its whole output cannot be disposed of in its immediate neighbourhood, but some portion of its product must be sent to distant places. It may be necessary, also, to bring some of its raw materials from distant parts. Under such circumstances the location in a seaport is a distinct advantage, not only from the saving of handling in transport, but from the opportunity which the general management has of maintaining a closer contact with its shipping business. It may be noted that except in some few cases where there is special advantage from the location of raw material and power, such as coal and iron, the largest cities of the world are on the sea coast, or on some navigable waterway giving access to the sea.

2. *Some Educational and Social Advantages of Big Cities.*—It seems scarcely necessary to mention the advantage enjoyed by a resident in a large city in the attainment of education and culture from the better equipped universities, libraries, art galleries, and museums than could be provided for each small community. These advantages, moreover, are supplemented by opportunities for hearing the best of the world's artists in music and drama, and for congenial social intercourse.

3. *Conclusion.*—The relative decline of the rural population and the corresponding growth of cities had its origin in what is known as the Industrial Revolution, and is a phase in the progress of our civilization. The extended use of machinery and the application of science to agriculture has so increased our capacity to produce food that a larger proportion of the population—also assisted by scientific and mechanical aids—has been set free to provide for other wants. The result has afforded a degree of material comfort hitherto unknown to us. A high standard of living throughout a self-contained community is incompatible with a relatively numerous food producing class, consequently the phenomenon, which has caused so much concern in many minds, is really evidence of progress.

Present tendencies appear to be firmly set in the direction followed during the past, and it is probable that the big cities of the world will be more numerous and larger than now, and that the greater of our Australian cities have by no means reached their ultimate dimensions. It is desirable, therefore, that plans for the future should be made accordingly.

CHAPTER VIII.

CLIMATIC FACTORS AFFECTING THE DISTRIBUTION AND LIMITS OF THE POPULATION OF AUSTRALIA.

By Henry Barkley,

Assistant Director (Research),
Commonwealth Meteorological Bureau.

- I. The Control Exercised by Food Supply.
- II. Rainfall and Density of Population.
- III. The Role of Climate in Determining Human Comfort, Health and Energy.
- IV. Conclusions.

I.

The population of any large area is limited by two major factors—the potential food supply and the degree of health and comfort attainable by its inhabitants. Man in common with many other animals has achieved wonders in proving his adaptability so that health, if not comfort—and the two are usually concomitant—has been attained by great striving, both in the tropics and in polar regions, by white men of the temperate, or, rather, the cyclonic lands. But no device has yet overcome the necessity of providing such quantities of food as will maintain the body temperature at the steady level required for vigorous life. Conceding, therefore, man's skill in meeting the vagaries of the earth's climate as it directly affects his body, we must still consider him absolutely dependent upon

his food supply, and therefore indirectly at the mercy of sunshine, wind and rain; and the greatest of these, in the world's granaries, is rain.

Postponing the investigation of comfort in relation to health and energy, let us first consider the primal necessity, food supply, as it affects the habitability of our continent.

It may seem a quaint conceit to consider men as we do cattle and sheep, and to talk of the carrying capacity of a country in terms of the rainfall. But the two great sources of food supply—flesh and grain—are intimately dependent upon the rainfall, and the human population is therefore ultimately conditioned by this element. Since the Australian meat-eating capacity is about 216 lbs. per head per annum, it would require sheep and cattle grazed upon 5.2 acres under 15 inches of rain to supply a man's needs in this direction. Also our typical man requires 5 bushels of wheat, which on an average a Victorian farm would grow on one-third of an acre with a rainfall of about 15 inches. Such is the numerical basis of a correlation between population and rainfall.

If the sheep were grazed in the same district in which the wheat was grown it would require 5.5 acres under the 15 inches rainfall to keep one adult in flour and meat for one year, irrespective of the large area devoted to working stock, roadways and other contributory purposes. There are two variables in the equation—the quantity of land and the quantity of rain—and the land required varies inversely as the rain received. So rainfall dominates the whole problem.

How close are the correlations of food supply with the rains is perhaps best illustrated from some recent

investigations of the author. For the State of Victoria it can be shown that 80 per cent. of the fluctuations of the wheat yield about the normal depend upon the critical spring rainfall, while the remainder of the variations are related to the weather of the previous and the following months.

The following table demonstrates the extent to which the wheat yield varies with the rainfall in Victoria. If during the remainder of the growing period the rainfall varies within its usual limits, the effect of the August-September total is such that—

TABLE I.

Rainfall and Wheat Yields.

1	inch of rain in Aug. or Sept. produces	8.22 bushels per acre
2	inches " " " "	11.87 "
3	" " " " "	13.90 "
4	" " " " "	15.45 "
5	" " " " "	16.46 "
6	" " " " "	17.44 "

Similarly the grazing capacity of all but the most rugged mountain country bears a definite ratio to the amount of moisture available, the number of sheep per acre being approximately four per cent. of the annual rainfall quoted in inches. In other words, twenty-five inches of rain are required to support a sheep to the acre. But all these ratios are subject to a steady and progressive change, the result of man's conquest over nature. Artificial fertilizers, new wheats and improved tillage are raising the yield of grain a quarter of a bushel an acre a year in the Murray basin and in the more advanced districts at more than twice that rate. Where grazing is in rotation with cultivation the stock-carrying capacity influenced by the presence of superphosphate ferti-

lizers is mounting rapidly, and in the irrigated areas comparisons with permanent pastures are futile, although a distinct improvement is overtaking the grass lands. In the middle northern district of Victoria the small proportion of irrigated land devoted to grazing has raised the carrying capacity of the whole district by fifty per cent. This increase of a sheep on every three acres is a measure of one of the benefits due to irrigation.

The steady readjustment of these ratios means a constant increase in the potential food supply, and consequently in the population that the country can support. Any estimate, therefore, of an optimum population must be subject to the qualification that such an estimate pertains to a certain stage of development in the art of agriculture.

The Wimmera district of Victoria provides an excellent example of this progress. In thirty-two years the wheat yield improved from 6 bushels to 22 bushels per acre. In nineteen years the fleece weight increased from 6.3 lbs. to 8.0 lbs. In twelve years the sheep grazed rose from .65 to .78 per acre.

This necessity of specifying the stage of progress must be remembered when Australia is compared with the United States as at the census periods of 1921 and 1920 respectively.

The argument can be advanced a stage further if we imagine a perfect economic adjustment between the land, the climate and the primary industry best suited to them. For example, land with less than ten inches of rain per annum (Fig. 11) is mainly devoted to sheep and beef cattle; ten and twenty inches of rain form in the sub-tropics the climatic and economic limits re-

spectively of the wheat zone; twenty to thirty inches of rain constitute the ideal heavy carrying sheep country, with an upper limit set by the diseases attendant upon wet pastures. Within this rain belt lies the optimum region for sheep, with an annual rainfall of twenty-three inches, this being the rainfall which supports the greatest sheep density throughout eastern Australia.

Between twenty and thirty inches also is included much of the mixed farming, and, with the higher rainfalls, a large proportion of the dairying industry and the root crops. The highest rainfalls in the Australian tropics grow sugar and cotton, but in the highlands of the south they support so far only dense stands of timber. Parts of these southern regions are utilised as the catchments for the great irrigation schemes of Northern Victoria and the Riverina.

This apportionment of the rainfall belts to primary production is already well defined, but will become intensified as the pressure of population and acute competition compel the exploitation of the highest utility in every region.

Interesting examples of these progressive changes are to be found in the East Indies. In both the Philippines and the Dutch islands it pays better to grow more valuable export crops than to devote the whole of the land to rice. In the first case the labour, and in the second case the lands, are put to more efficient use. In Java the necessity of importing rice has diverted some of the former rice fields to the cultivation of crops having a higher food value, such as the cassava and sweet potato. In the Malay Peninsula only two-fifths of the rice consumed is grown locally, so lucrative have other

occupations become. These changes from the primitive self-supporting state culminate in the conditions of Western Europe and New England, where dense populations thrive upon the manufacture of high-valued products.

The ideal distribution of population will disclose primary industries so nicely adjusted as to extract from the soil the greatest return of which the rainfall has made it capable. In that last stage, whether the marketable product be wool, wheat, milk, or meat, the index of the country's varying capacity will surely be the rainfall—the rainfall which has been converted into the highest possible value in goods. It is proposed, therefore, to consider the possible extent and distribution of Australian population in terms of its fundamental necessity—the rainfall. The present adjustment may be seen by comparing the Rainfall Map of Australia, Fig. 11, with the Population Chart, Fig. 4, p. 115.

II.

In addition to investigating the present distribution of our peoples we shall predicate future possibilities largely on the assumption that at a certain stage in our development we shall reach the present stage of relative saturation reached by the people of the United States, or at least of those districts west of the Mississippi, always, of course, having in mind the relative fertility of the two countries as represented by their productive rainfalls.

To this end let us examine the United States at the last census held in 1920. It is the western States, constituting about two-thirds of the total area, that most closely resemble Australia as regards climate, and in

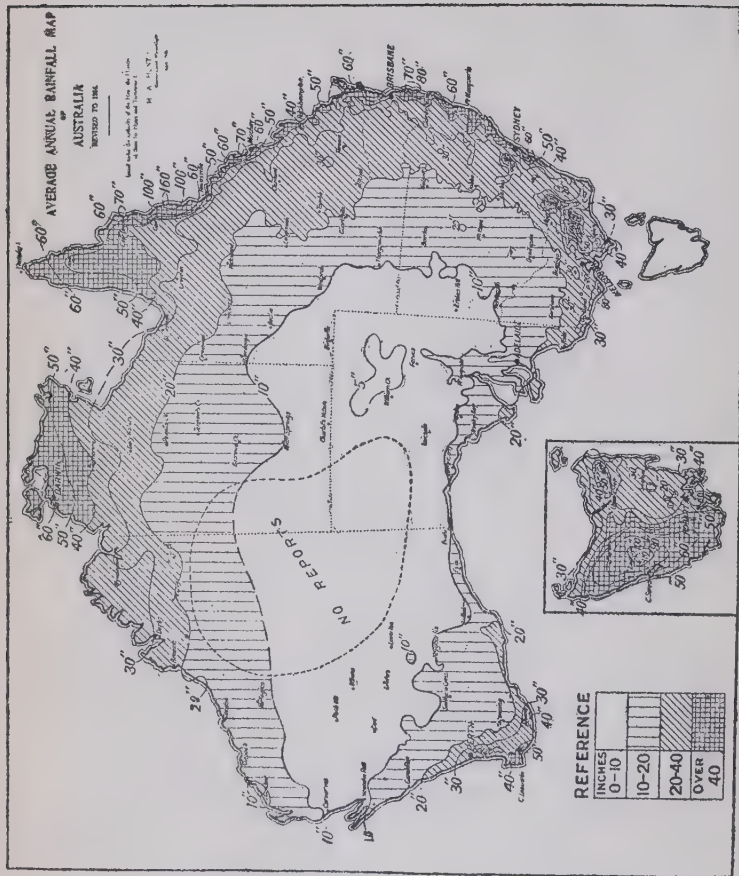


FIG. 11. ANNUAL RAINFALL OF AUSTRALIA.

The area marked NO REPORTS constitutes the "No Settlement" portion excluded from the population estimates. It consists of 440,000

the distribution and occupation of the population, but it is interesting to note that the people of the whole area are dispersed through the country on a rainfall basis. Not every State has a density proportional to its average rainfall—some fall short of their potentialities, but there is a very definite upper limit to the density set by the greatest arbiter in the natural world—the supply of water. The correlation is not a linear one, since the density of population increases more rapidly than the rainfall. The data are presented in the following table:—

TABLE II.

Rainfall and Density of Population in U.S.A.

Annual rainfall inches	10	15	20	25	30	35	40	45	50
Population density, persons per square mile, 1920 census—									
Average conditions	3.4	6.2	11.5	20	28	50	70	90	100
Maximum attained by a few States	3.8	7.7	16.0	32.5	68	140	288	600	1250

The last line in the table represents a limit only attained by a few States in the Union. It connotes a highly developed civilization—one in which secondary industries have displaced the farmer, and correlation of population with rainfall no longer appears reasonable. It should be noted, however, that the density of seven hundred persons per square mile reached in England actually occurs at a lower rainfall than indicated by the table, while a similar density in Java is only attained with a rainfall of one hundred inches. The comparison is between a highly industrialised country and one still wholly dependent on primary industries.

The second line of figures shows the average density of population ascribable to each rainfall throughout the States. Together the first and second lines present the correlation existing between the rainfall and the density of the population supported thereby. This relationship was true of U.S.A. in the census year 1920, since in the average the advanced commercial States of the north-east are offset by some of the retarded States, particularly those with a large coloured population in the south-east. If the same ratios are to be applied to Australia we must question the probability of ever developing in our south-east such vast commercial centres as are congregated in the north-east of the United States. In view of our apparent lack of fuels and heavy ores, it seems scarcely reasonable to expect such a congestion of people acting as manufacturers and suppliers for the rest of the continent. Still we have the germs of such aggregation in the apparently disproportionate size of the state capitals, particularly Sydney and Melbourne.

The alternative to applying the American scale for the whole Union to Australian estimates is to base our calculations on the conditions prevailing in the States west of the Mississippi only. These occupy two-thirds of the area of the Union, and in the absence of huge manufacturing and commercial centres appear better to represent the type of population grouping that will be attained in Australia.

The following table shows the correlation existing between rainfall and the average density of population west of the Mississippi:—

TABLE III.

*Rainfall and Density of Population
West of the Mississippi.*

Rainfall, inches	10	15	20	25	30	35	40	45	50
Population density Persons per sq. mile, 1920 Census Average conditions	1.4	6.0	12.4	19.0	26.0	31.0	35.0	38.5	42.0

Comparison with the second line in the previous table (II.) discloses the lower densities due to the exclusion of the New England and Great Lakes areas from the present table (III.).

The potential population of Australia will now be estimated by the data derived from the analysis of the distribution in the United States.

TABLE IV.

Potential Population of Rainfall Areas.

Annual Rainfall.	Aus- tralian Areas in Rainfall Groups.	U.S.A. All States Average Density. Persons per sq. mile.	Australian Potential Populati n based on all U.S.A.	U.S.A. Western States Average Density. Persons per sq. mile.	Australian Potential Population based on Western U.S.A.
Inches.	Sq. miles.	sq. mile.	Persons.	sq. mile.	Persons.
Under 10 in. . .	625,357	2.4	1,499,000	0.5	312,000
No settlement area	444,777	—	—	—	—
10 in. to 15 in.	603,605	4.6	2,597,000	3.0	1,810,000
15 in. to 20 in.	358,458	8.5	3,047,000	9.0	3,225,000
20 in. to 30 in.	534,766	20.0	10,695,000	19.0	10,161,000
30 in. to 40 in.	213,195	50.0	10,660,000	31.0	6,609,000
Over 40 in. . .	194,423	90.0	17,498,000	38.5	7,486,000
Totals	2,974,581		45,996,000		29,603,000

From the aggregates in the fourth and sixth columns a deduction has been made. An area of 442,000 sq. miles

in the western interior of the continent contains no settlement. On the Rainfall Map (Fig. 11) it is marked "No Reports," and it seems probable that the major portion of this will remain entirely unpopulated for many years. This tract lies mostly within the ten-inch rainfall, and therefore resulted in a deduction of one million persons from the first population total in the fourth column and two hundred thousand from the sixth column.

The remaining area excluded from the population estimate consists of 2,777 square miles in the mountainous south-western district of Tasmania.

One other disability must be considered, but it is not easy to assess its effect. The disadvantage is that rainfall with a uniform distribution through the twelve months is only found in the south-eastern States of Victoria and New South Wales. Over the remainder of the continent the rainfall has a marked seasonal incidence. A wet summer alternates with a very dry winter throughout the greater part of the tropics. In the southern portion of Western Australia ninety per cent. of the annual rainfall is confined to the seven winter months, a distribution very favourable for wheat growing, but not useful for summer fodder crops.

In America the eastern states enjoy an abundant rainfall, well spread through the year, but with a slight maximum in the summer, an ideal distribution for the most complete utilization of the land. Australia's deficiency in this respect is most marked where the total annual rainfall is heavy in Northern Australia. This shortcoming might justly be considered as halving the potential population of that area. This reduction by three million applies only to the estimate based on

the whole of the United States, and therefore including the favoured area east of the Mississippi.

Australia's potential population, therefore, if based on the conditions prevailing throughout the United States of America, in 1920 would be, at a similar stage of development, approximately forty-three million people. A century would elapse before this total would be reached at our present rate of increase.

A better estimate is provided by the aggregate of the sixth column in Table IV. above. The exclusion of the eastern states rids the data of the effect of the commercial zone of the north-east and of the great tract of uniform rains, leaving only the states west of the Mississippi, which are more readily comparable with Australian conditions.

This basis provides the most credible estimate, and indicates approximately thirty million people for the population when Australia has attained the same relative stage of development and population as the western states had reached at the census of the year 1920.

Eighty years will be required to reach this total at the present rate of growth. A fall in the birth-rate will probably be partly counter-balanced by a decreasing death-rate. A steady improvement in the utilization of resources will increase the capacity of the country beyond the present estimate unless the standard of comfort demanded increases in proportion to the application of inventive genius to production.

The allocation of this population among the Australian States is shown in the following table, in which the densities are based on the United States west of the Mississippi. Fifteen per cent. of the area of Australia,

TABLE V.

Distribution of Potential Population Among Australian States.

Potential Population.

Annual Rainfall.	Density of Population Western U.S.A.	North and Central						New South Wales.						Victoria. Tasmania. Australia.					
		Western Australia.	South Australia.	South Australia.	Central Australia.	Queensland.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.
Inches.	Persons per sq. mile.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.
Under 10	0.5	103,000	115,000	30,000	40,000	24,000	—	—	—	—	—	—	—	—	—	—	—	—	312,000
10 to 15	3.0	765,000	109,000	398,000	245,000	235,000	—	—	—	—	—	—	—	—	—	—	—	—	1,810,000
15 to 20	9.0	847,000	179,000	567,000	1,006,000	502,000	—	—	—	—	—	—	—	—	—	—	—	—	3,225,000
20 to 30	19.0	1,450,000	226,000	1,725,000	4,627,000	1,438,000	—	—	—	—	—	—	—	—	—	—	—	—	10,161,000
30 to 40	31.0	1,845,000	32,000	1,167,000	1,921,000	1,040,000	—	—	—	—	—	—	—	—	—	—	—	—	6,609,000
Over 40	38.5	151,000	4,000	2,268,000	3,509,000	700,000	—	—	—	—	—	—	—	—	—	—	—	—	7,486,000
Total		5,161,000	665,000	6,155,000	11,348,000	3,939,000	—	—	—	—	—	—	—	—	—	—	—	—	29,603,000

The numbers obviously cannot be accepted in all details. The rugged high rainfall area of Western Tasmania will not support the complement shown, but conversely we have the case of mining areas such as Broken Hill and Kalgoorlie, independent of rainfall, and established in a semi-arid country. It is probable, therefore, that the future distribution will approximate to that shown, with the possible exception of the Northern Territory.

the western interior, from which no meteorological reports are received, and which is unlikely to be inhabited, is excluded from the calculation. Penetration of this area, if it should occur for mining purposes, would scarcely counterbalance the neglect of wet but rugged mountain areas in Tasmania and in the south-east corner of the mainland.

Having estimated these potential populations it is of interest to examine the present position in the more populous Australian States.

Victoria in the year 1926 had a population of 1,696,670 persons and a mean density of 19.48 persons per sq. mile, a condition actually in excess of the western American standard for the corresponding rainfall. These people were so distributed in relation to the annual rainfall that a very simple formula fitted eighty-six per cent. of the population of the State. For every inch of rain over eleven inches the density increased by two persons per sq. mile. The average rainfall for the whole State is about twenty-five inches, but the rainfall at which the greatest density occurs is 23.5 inches per annum, the maximum density reached at this rainfall being 26.45 persons per sq. mile. Such a density is equal to the best attained in America at the same rainfall.

Two interesting corollaries result from the investigation of the present distribution of population in the Australian States—

- (a) The rainfall value which supports the maximum density of population is also the optimum for the chief primary industries upon which that population lives. This justifies the assumption upon which the comparisons with

America are based, *i.e.*, that the population will ultimately be distributed according to rainfall.

- (b) The metropolitan population in Victoria, New South Wales and Queensland does not represent an accretion beyond the correct proportion of urban dwellers, but only a geographical concentration in lieu of numerous small towns, due to port facilities and other geographical factors.

The first conclusion is that the predominant primary industries control the distribution of the people. It was mentioned above that the maximum density of sheep in Victoria was to be found with a rainfall of twenty-three inches per annum. But this rainfall would also represent a mean between that of the ideal dairy pastures and the ideal wheat lands. The optimum rainfall for population density is therefore largely dependent upon the optimum of the chief industries affecting the distribution of population. Reference to other States confirms this view. In New South Wales the maximum population density occurs with 36.3 inches of rain, and the heavy annual total is undoubtedly associated with the coastal dairying industry, although it may be slightly affected by the situation of large towns in adjacent areas. The density of population at the most favourable rainfall is only nineteen persons per sq. mile in the older State, compared with over twenty-six persons in Victoria.

In Queensland the most favourable conditions occur at a rainfall of thirty-eight inches per annum associated with the industries thriving on the Pacific Slopes. In all these States the optimum rainfall for sheep is the same—twenty-three inches per annum, in

spite of the fact that it is a summer rain in Queensland, a winter rainfall in Victoria, and a mixed control in New South Wales. Progressing northward, grazing becomes less a matter of mixed farming than in Victoria, so the proportion of the population directly associated with the wool growing becomes less, and the industry, which produces large incomes, ceases, in the northern States, to influence substantially the distribution of population.

The second corollary emerging from the detailed study of the State populations was that each distribution followed the normal frequency curve on either side of the optimum rainfall, and did not in the case of Victoria, New South Wales and Queensland exhibit any distortion such as might have been expected from the large metropolitan populations. In other words, the capital cities properly belong to the rainfall belt in which they stand, probably in lieu of a number of smaller urban centres which would otherwise have existed. Beyond such concentration there is no evidence that the total urban population is not in proportion to the rural population, which has been automatically reduced with the introduction of labour-saving devices on the farm.

These remarks do not apply to West and South Australia, where the metropolitan aggregates are apparently in excess of the numbers required for their respective rainfalls, and are disproportionate to the rural populations in those areas.

The conclusions reached regarding the future growth of Australia's population are discussed in the summary following the consideration of the direct effects of climate.

III.

Granted the means of subsistence, man's effective occupation of a territory depends upon the attainment, without undue effort, of a degree of comfort conducive both to health and to a maximum output of energy. Temperature and humidity are the principal factors conditioning human comfort, since the body is maintained in thermostatic equilibrium at a temperature of 98.4° F., as the result of a balance of heat income developed from food against the loss due to radiation and evaporation or transpiration.

Many criteria have been suggested as the bases for scales of relative comfort or discomfort. When it is desired to chart the zones of similar degrees of comfort on a map or where any extended comparison is desired, dual references, such as temperature and humidity, must be discarded and a single linear scale adopted. The relative humidity of the atmosphere was accorded unmerited pre-eminence for many years. It is an excellent index of drying conditions for inanimate objects, but its usefulness ceases there. The human body functions as a wet bulb thermometer in losing heat by radiation, conduction and convection, and also by evaporation or transpiration. The latent heat of the vapour transpired is almost wholly regulated by the external pressure exerted by the water vapour in the air against the uniform vapour pressure peculiar to the body temperature, *i.e.*, a vapour pressure equal to the barometric pressure of 1.8 inches of mercury, representing the conditions of saturation at 98.4° F.

As the result of experiment, confirmed by comparison with earlier methods of constructing comfort scales, the author determined to use the atmospheric vapour pres-

sure as a measure of comfort. This vapour pressure is the major factor governing transpiration, the greatest source of body heat loss in all Australian latitudes and altitudes. Vapour pressure variations are also correlated with other climatic elements which affect the flow of heat from the body, and, therefore, our personal comfort. A vapour pressure scale is equivalent to a dew point scale, but is more suggestive of the actual physical process involved.

Limits of comfort were experimentally found, and afterwards checked by converting earlier comfort scales into terms of vapour pressure.

One remarkable confirmation of the utility and accuracy of the vapour pressure scale was disclosed by testing it against the classification of personal feelings registered by a meteorological observer on the south coast of Queensland. Throughout one winter this observer very consistently entered in his register a personal estimate of the temperature in such terms as "cold," "cool," "mild," "pleasant," "warm," etc. These entries for the six months were arranged in what was considered a correct gradation from the coldest to the warmest. Comparison was then made with (a) the dry bulb temperature, (b) the wet bulb temperature, (c) the relative humidity, and (d) the absolute humidity or vapour pressure. Only in the case of the latter element was there an orderly arrangement consistent with the terms representing degrees of personal comfort. Temperature and relative humidity showed an erratic misplacement on the scale, which discounted their value as indicators of the effect of the weather upon the human body. This human hygrometer ceased to function so accurately in the summer months, but

the range covered in the winter was sufficient to justify the comfort limits already determined.

When the atmospheric vapour pressure rises above half an inch it checks the transpiration outflow, and the body temperature rises, causing perspiration and discomfort in the average white man.

If the air temperature be above blood heat, the body suffers a radiation income instead of a loss, and calls for a greater transpiration effort to reduce the internal temperature. This is the normal condition on summer afternoons in the north-west interior of the continent.

When the vapour pressure of the air falls below one-fifth of an inch the transpiration rate is too rapid, because there is too little resistance to the outward pressure from the skin and lungs. With the rapid loss of moisture two different sensations may be experienced according to circumstances. If the air be hot and dry, the mucous membranes of the nose and throat become parched, but if the air temperature is low the sensation of cold is felt owing to the too rapid loss of heat. The map (Fig. 12) showing the Comfort Zones in Australia was compiled from the mean vapour pressure at 9 a.m. for each month, since the value at that hour is a close approximation to a mean of the twenty-four hours. Each tenth of an inch of vapour pressure above or below the limits of comfort (.2 to .5 inch) in each month was reckoned as a unit of discomfort. The sums of these units for the twelve months were then reduced to a logarithmic scale, and finally this number was halved to get a convenient number of degrees on the scale of discomfort.

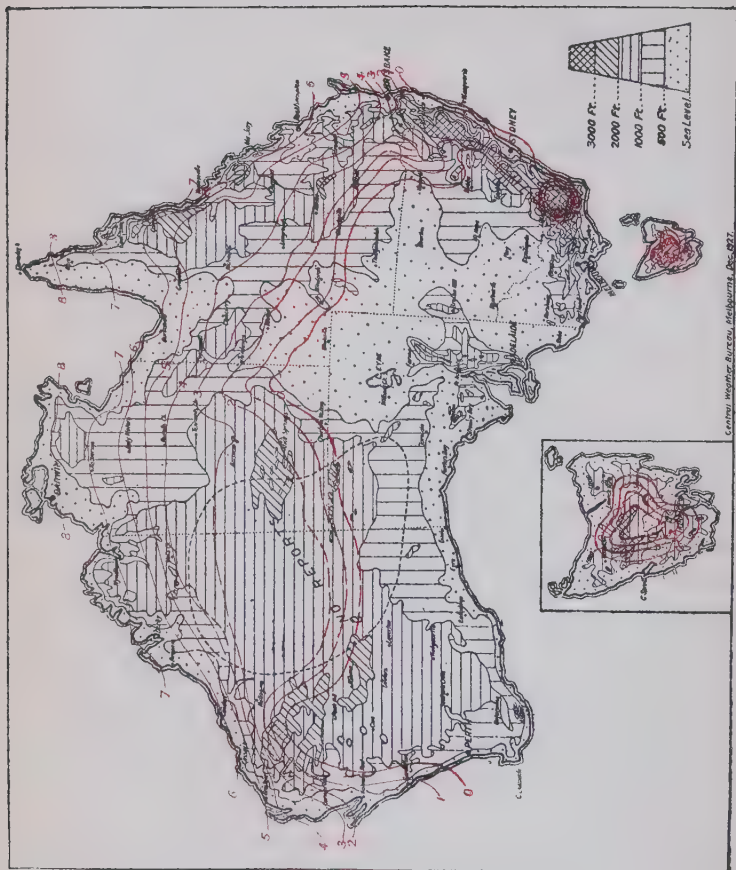
It should be noted that the original summation gives equal value to two-tenths of an inch of vapour in excess

for one month, and to one-tenth of an inch in excess for two months. The introduction of the logarithm effects a convenient reduction of the scale, and provides for the law governing physiological response, by which $\text{Sensation} = \log. \text{Stimulus}$.

Fig. 12, the Comfort Map of Australia, shows, south of the zero line, that area which does not experience more than two consecutive weeks of uncomfortable weather. Northward, successive zones of increasing discomfort lie between the numbered isopleths. The base map shows the relief of the land surface for comparison with the discomfort zones.

The upper limit of comfort is familiar to all from the fact that perspiration is noticeable with very little exertion. Some people prefer this languid heat, and the novel reason has been advanced that it prevents one from over-exertion, thus exercising a general inhibition, that conserves one's energies.

The lower limit of comfort is most familiar as a too cool condition which prevails in mid-winter on the highlands of south-eastern Australia and on the Tasmanian tablelands. (Fig. 12.) Only towards the centre of the continent does the warm deficiency of moisture become a regular climatic feature. This region is shown on the map (Fig. 12) as a southward droop of the comfort limit between Central Australia and the north-west coast. During occasional expansions of this area in dry years the adverse effects are felt in the winter months in the inhabited hinterland. Some non-occupational disease, for instance, affects men, women and children in Broken Hill at intervals of approximately six years, when the vapour pressure (absolute humidity) is lower than usual, and the results are reflected in the death rates of that city.



Central Weather Bureau, Melbourne, Dec. 1927

FIG. 12. COMFORT MAP OF AUSTRALIA.

The base map shows the elevation of the land surface. The red isopleths define the zones having uniform degrees of discomfort in the

In Melbourne this lower comfort limit of one-fifth of an inch vapour pressure is occasionally passed on hot north wind days in the summer. Numerous deaths from infantile diarrhoea during these heat waves have been correlated with the dry heat, *i.e.*, with a low vapour pressure. Unusually dry weather on the West Coast of Tasmania is attended by attacks of typhoid, and in Northern Australia the dry south-east trade wind is sometimes called the "fever wind."

Another adverse effect to which Dr. H. Lawrence has drawn attention is the incidence of keratosis in the inland districts, particularly among fair people, due apparently to the intensity of ultra-violet insolation, where the humidity is not sufficiently high to act as a protective screen. There is also a strong probability that a considerable amount of nervous irritation and eye trouble originates with the intensity of the light in the drier regions. Conversely, lupus of local origin is now practically unknown. The few cases reported come from Great Britain or the cool, wet districts of New Zealand and Tasmania. A correlation exists between the hot, wet districts and the maximum incidence of hookworm in tropical Australia.

It is obvious that if excess or deficiency of moisture in the air adversely affects the health it must influence the sensation of personal comfort, even within the less dangerous extremes. The sense of comfort or fitness is a sure index of the amount of energy available for physical or mental pursuits. Physical fitness is associated with the higher temperatures and humidities, and mental ability with the lower, provided they are within the region of comfort. For these reasons it becomes important to find in what regions and in what seasons

we may expect excess or deficiency of human energy, both mental and physical. Regions which share the same degree of comfort or discomfort in the annual aggregate lie in the same zones in the Comfort Map. (Fig. 12.)

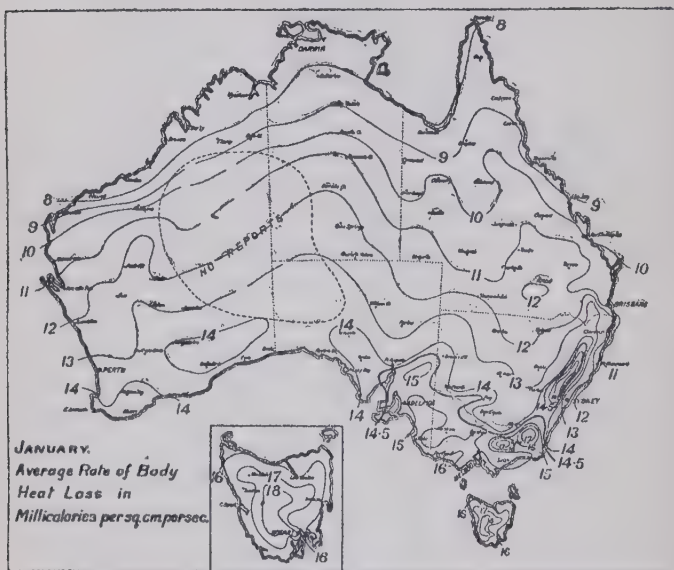


FIG. 13. RATE OF BODY HEAT LOSS, KATATHERMOMETER EQUIVALENTS.

The 14.5 line marks the rate below which perspiration occurs when at rest.

In all that area south of the zero line none of the twelve months has an average vapour pressure outside the comfortable limits, *i.e.*, on the average such places have less than a fortnight's discomfort in the year.

The white man's energy should be lowest, according to this map, between Thursday Island and Darwin, and

generally lower in the tropics than towards the South Coast.

But there is a notable seasonal variation in the degree of comfort, and therefore the amount of energy available, so that the incidence of seasonal occupations might

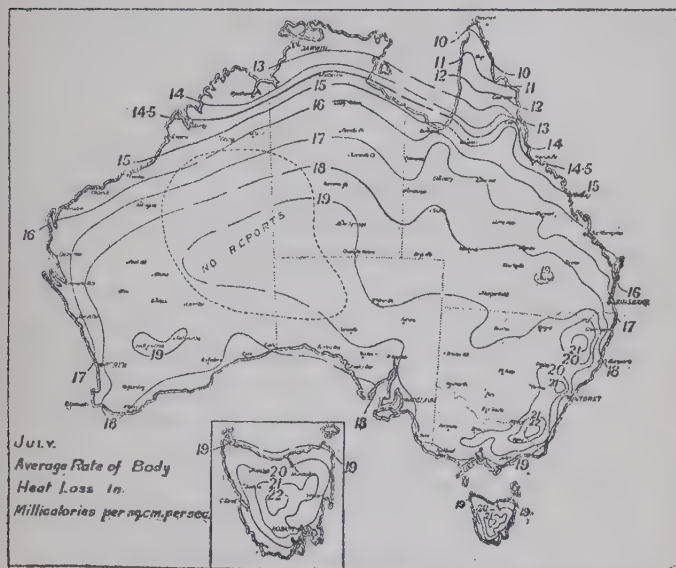


FIG. 14. RATE OF BODY HEAT LOSS, KATATHERMOMETER EQUIVALENTS.

The 14.5 line marks the rate below which perspiration occurs when at rest.

permit of even heavy manual labour by white men in the tropics, provided the greatest exertion were called for in the winter time.

The seasons are compared in the next two maps, which show the average rate of body heat loss in January (Fig. 13) and July (Fig. 14) throughout the continent. The heat losses are given in millicallories

per square centimetre per second, and are really the equivalents of readings on Leonard Hill's Katathermometer, having been calculated by his formula from the dry bulb and wet bulb thermometer readings. There is, of course, a diurnal fluctuation in these amounts, but the 9 a.m. values are given as a convenient mean for the twenty-four hours. Moreover, Huntingdon has pointed out in connection with factory work that the morning conditions affect the tone of the whole day's work.

If these summer and winter maps be compared with the contoured base upon which the comfort lines are drawn on the first comfort map (Fig. 12), it will be seen how closely these heat losses, which are the sums of radiation and transpiration rates, are affected by the elevation of the land. In the east one may note the higher rates, and therefore more pleasant conditions, of the Atherton Plateau, the Mitchell District and the New England Plateau, separated from the central and southern tablelands of New South Wales by the Cassilis gap in the ranges. On the January and July maps the heavy lines show where a loss of 14.5 millicalories occurs. When the rate is lower than this a person perspires when at rest. In mid-winter only the Peninsula, Northern Australia and North Kimberley suffer this disability, but in mid-summer only Victoria, Tasmania and the settled areas of South Australia enjoy immunity.

Taking this rate as a criterion, the manual labourers at Derby (W.A.) and Townsville (Qld.) in July endure conditions similar to labourers in Port Augusta (S.A.) and Eden (N.S.W.) in January. In this respect particular interest attaches to Townsville, which has the largest white urban population within the tropics.

Port Douglas (Qld.) in July resembles Sydney in January. While the tropics present undoubted disadvantages in summer, manual labour in certain seasonal occupations may find favourable climatic conditions in the winter. The sugar industry, which calls for some of the hardest manual labour in the north, makes the greatest demands for exertion in the more favoured winter months.

In the next graph (Fig. 15) the annual variation of the rate of body heat loss is compared for Melbourne, Sydney, Brisbane and Townsville. The most pleasant conditions prevail during such seasons, as the curve is above the critical 14.5 millicalories line.

The last graph (Fig. 16) shows on the author's Vapour Pressure and Comfort Scale the range between the months with the highest and lowest absolute humidity. The Comfort Scale shown refers only to a single month and not to an annual aggregate, as does the map (Fig. 12).

The graph is self-explanatory, and affords some interesting comparisons. The twelve centres representative of Anglo-Saxon civilization are those chosen by Prof. G. Taylor, viz., Sydney, Perth, Hobart, Cape-town, Johannesburg, London, Aberdeen, Berlin, Toronto, New York, Chicago, and Seattle.

The favourable condition at the ancient centres of western civilization, Athens and Rome, and the modern world metropolis, London, are worthy of note. To the relatively dry conditions at Athens, Hann, the Austrian climatologist, ascribes much of the bodily and mental vigour which made the Greeks the torchbearers of European civilization.

The variations among the Australian capitals are in-

licated by their positions on the graph, in strong contrast to the monotonous high humidity level of the tropical islands.

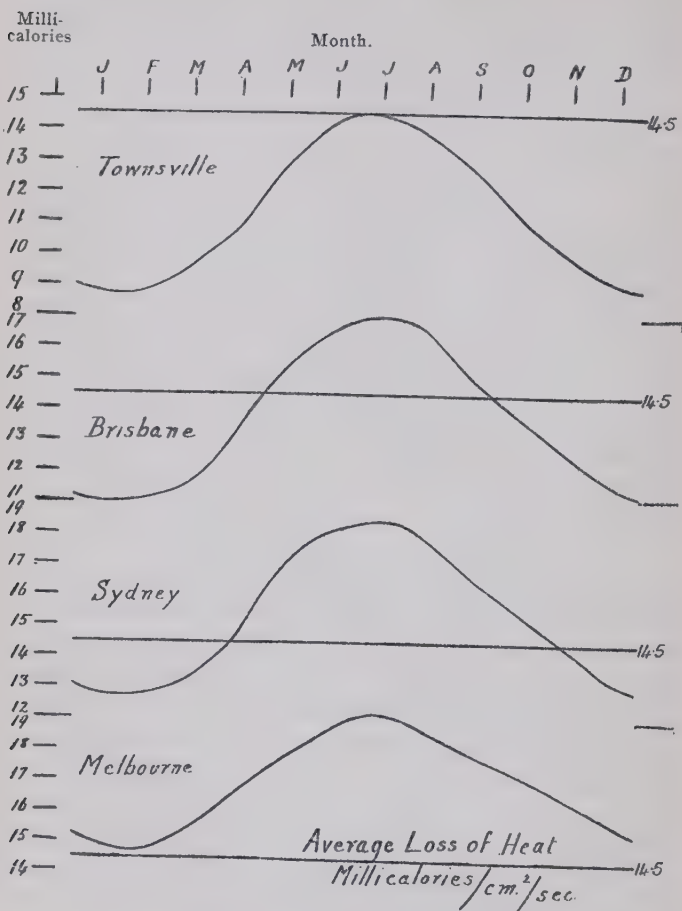
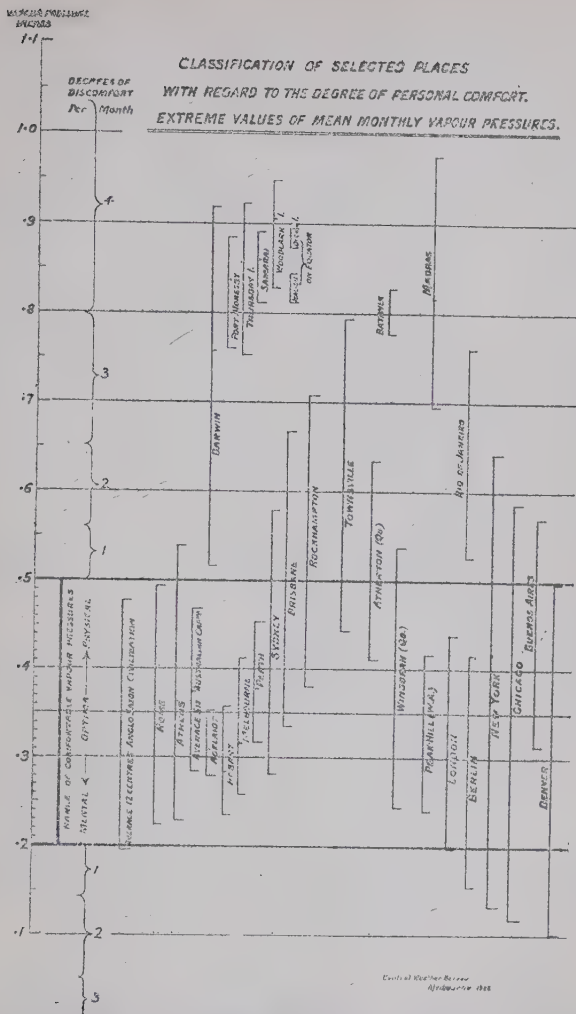


FIG. 15. AVERAGE RATE OF BODY HEAT LOSS THROUGH THE YEAR.

Rates above 14.5 millicalories per square centimetre per second are comfortable.



: Upper limits represent summer and lower limits winter humidities. The region of comfort lies between .2 and .5 inch Vapour Pressure.

Our cities do not, however, reach the adverse extremes attained by New York and Chicago every year. Rio de Janeiro, on the tropic, with the largest population in the Southern Hemisphere, is never more than a fortnight within the zone of complete comfort, and at latitude 19° S. Townsville, which has the distinction of the largest white population in the tropics, just reaches in midwinter the favourable conditions of a southern summer.

The data presented show that sub-tropical Australia enjoys a favourable climate practically throughout the year for the development of an energetic race. The tropics experience adverse conditions in midsummer, but the greater part of the area enjoys some respite in the winter, when conditions are equal to those of a southern summer.

Many of the disadvantages of tropical life are disappearing under hygienic control, and much improvement may still be expected.

The maps showing the disparity between the rate of body heat loss in the north and in the south certainly emphasize the necessity of a diet adjusted to supply the much lower quantities of heat required in the tropics.

The daily variability of the weather will always be an important factor in favour of the southern States, but the extent of the disadvantage suffered in the tropics is adequately indicated by the degree of discomfort on the Comfort Map (Fig. 12).

IV.

The rainfall of a country has been advanced as a suitable basis for the estimation of its potential population. Using this criterion, it is found that at its

greatest density of 26.45 persons per sq. mile in the region receiving $23\frac{1}{2}$ inches of rain per annum the State of Victoria attains a condition that compares with the highest densities recorded in the United States for a similar rainfall. The greater part of the continent, however, falls below this population density, and the amount of the deficiency is clearly set out in the following Table VI., which shows the present and potential populations and densities for each of the Australian States:

The outstanding feature of Table VI. is the revelation of the tremendous future before the States of Western Australia and Queensland, whose populations may increase to fourteen times and thirteen times their present numbers respectively. These are the States where developmental work is most likely to bear fruit. North Australia will have to await the result of progressive experiments in the Queensland tropics. Tasmania has room for a larger population and will receive more attention when intensive culture follows the present extensive phase throughout the sub-tropical areas. South Australia's absorptive powers are small, as she is approaching the relative saturation already attained in Victoria, but has a much lower rainfall.

Table VI. is based upon the assumption that Australia, for lack of certain raw material, is not likely to develop for many centuries the highly commercialised conditions of Western Europe or the north-east of the United States. The figures given represent a density of population comparable with that of the states west of the Mississippi at the 1920 Census. The fact that Victoria has passed this average condition indicates that it is no unattainable ideal. Saturation to this extent can

TABLE VI.

Present and Potential Population of the Australian States.

State.	Area.	Percentage area.	Population.		Percentage total population.	Poten- tial.	Density of population. Present.	Poten- tial.*
			Sq. miles.	%	Persons.	Persons.	%	%
Western Australia	975,920	32.81	374,996	5,161,000	6.20	17.4	0.39	5.3
South Australia	380,070	12.78	558,883	665,000	9.27	2.2	1.49	1.8
North and Central Australia	523,620	17.60	3,765	6,155,000	0.07	20.7	0.007	11.3
Queensland	670,500	22.54	875,187	11,348,000	14.44	38.4	1.32	16.9
New South Wales	310,372	10.43	2,326,394	3,939,000	38.50	13.5	7.59	12.7
Victoria	87,884	2.96	*1,696,670	*1,613,000	28.01	5.4	*19.48	*18.4
Tasmania	26,215	0.88	211,216	722,000	3.51	2.4	8.19	27.5
Australia	2,974,581	100.00	6,047,111	29,603,000	100.00	100.0	2.05	9.9

*The State of Victoria has alone passed the potential population and density calculated upon the distribution of people in the Western United States according to the annual rainfall. The density of population for each State is estimated in the total area in each case.

only be attained by the gradual absorption of people in industrial and commercial occupations in place of the primary industries. This change depends upon an increasing efficiency in primary production, which will liberate for other pursuits people who will increase the capacity of the home markets and give the stability necessary for both primary and secondary industries to flourish.

Australia's growth, coming at a later period than that of the United States, will necessarily be slower as regards the factor of natural increase. Prior to 1870 the population of the United States doubled every twenty-five years, but after that date the rate declined to doubling in thirty-five years. Australia at a relatively earlier stage in her development is already at the lower rate.

It has been asserted that migration does no more than make up the deficiency due to a declining birth rate. This suggests an inflexible rate of increase. In any case, the declining birth rates in emigrant lands, together with the adverse factor of distance, are conducive to a very slight pressure from the white races of Europe.

At the present rate Australia's population should reach a degree of relative saturation comparable with that of the states west of the Mississippi in a little more than eighty years, when the population should be thirty millions. Thereafter growth will probably be much slower, but should the rate be maintained till we reach the present stage of the United States as a whole, our total of forty-three millions would be reached in about one hundred years.

Health, which largely depends upon the degree of personal comfort attainable, is improving with the advance of sanitary science, a recent instance being the control of hookworm in the Australian tropical areas.

With a suitable degree of comfort in the tropical winter, quite a considerable amount of manual labour is possible, even on the coast. In the sugar industry, for instance, most of the work is done under conditions no worse than in the harvesting of the grain in summer time in southern areas.

The inland tropical areas are, in the annual aggregate, comparable as regards conditions of human energy with the coastal regions of New South Wales, but the rainfall is rather unreliable, and this is the chief barrier to occupation.

Political considerations enter largely into the development of areas in preparation for increased population, and will control the rate of increase of density in certain areas until economic pressure is sufficiently strong to necessitate adjustments.

The marked contrast between the occupations and the density of population in the Riverina and in Northern Victoria is an instance of the political barrier to progress that is only now giving way. The extension of the border railways from the more populous southern State makes possible a more intensive form of culture, and the farmer is driving the grazier to seek new pastures. For other reasons, still political, the flock-masters, whose long leases will soon terminate in New South Wales, are exploiting the goldfield region of Western Australia.

The lure of wider areas takes the farmer by successive stages in the wake of the grazier from Gippsland

to the Goulburn Valley, thence to the Mallee and New South Wales or to the wheat-fields of Western Australia.

So the vanguard of primary producers pushes into the hinterland, making room in the wetter coastal regions for the more intensive forms of food production that will support the ever-increasing percentage of the population devoted to secondary production, who will in turn constitute the great home market that will stabilise all forms of industry.

CHAPTER IX.

THE WHITE SETTLEMENT OF TROPICAL AUSTRALIA.

By R. W. Cilento, M.D.,

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Department of Health, Queensland.

- I. History of White Settlement in Queensland.
- II. The Importance of the Experiment in Tropical Colonisation.
- III. The Statistics of White Settlement in Queensland.
- IV. Climate and Industry.

I.

The tropical part of Australia comprises 1,149,320 square miles, that is to say, some five-thirteenths of the whole area of the continent.

This vast domain includes more than half Queensland, the whole of the Territory of North Australia, part of Central Australia, and rather more than a third of Western Australia, and presents three main types of country, which may be called respectively the coastal plains, the coastal plateaux, and the inland steppes.

These distinctions are best marked in Queensland and least obvious in North-Western Australia, and with the exception of a small and unimportant area in Central Australia there is no part of the whole enormous tract with a rainfall below 10 inches yearly. On the contrary, the main mass of the country receives from 20 inches to 30 inches annually, and as the distance

from the coast diminishes the rainfall rapidly increases, attaining a maximum around Innisfail, North Queensland, where several small areas have a rainfall which approaches the heaviest in the world. The seasons are definite, the wet season coinciding with the summer months, while the dry season, which corresponds to the southern winter, has a climate that for six months of the year is almost perfect.

In certain localities this regular succession of wet and dry seasons is disadvantageous, since the whole of the annual rain falls in a few heavy downpours, which denude the desiccated surface of the soil that has been lying bone-dry for perhaps nine months previously. Fortunately there are enormous areas where no such disability occurs, and, indeed, the available fertile areas of tropical Australia fall little, if anything, short of the total acreage of fertile land in the more temperate southern part of the continent. The extraordinary fertility of the coastal regions, too, is beyond anything found in the colder parts, and the teeming sugar-cane fields are opulent, indeed, in comparison with the staid acres of the wheat belt.

The settlement of a country depends upon several factors, of which the first is the degree of its natural resources, and the next the ease with which they may be exploited. Among the factors which control the latter are such matters as transport facilities, ease of communication, distance from great trading and industrial centres and State capitals, the degree of local endemic or introduced disease, the availability and cost of labour, and many other features of economic life.

It is not surprising, therefore, to find that 95% of the population of tropical Australia is concentrated in

North Queensland, for in this area alone do these factors, as yet, favour the pioneer. The extensive network of railways, the excellent harbours, and the continuity of settlement with the Mother State of New South Wales, have made progress remarkably rapid, and, even at the present time, immigration and settlement are proceeding at a pace which is greater than that of almost any other part of Australia.

The history of the settlement of North Queensland, which we may take as indicative of the trend of events throughout tropical Australia, has been one of the greatest interest, not only from the point of view of economics, but from the viewpoint of science, for it has resulted automatically in the establishment of the greatest experiment in acclimatisation of which the white race has records. Nowhere else in the world has the white race successfully colonised a tropical country in such numbers and for such a length of time—and, it may be added, in defiance of every previously accepted theory as to the ability of white men to live, thrive and multiply in low latitudes.

Queensland lies between those same levels of latitude within which, in South America, lie Bolivia, the lower part of Brazil, and Peru, and the most northerly reaches of the Argentine, Chile and Paraguay, and within which, in Africa, lie the Orange Free State, Natal, the Transvaal, Bechuanaland, Rhodesia, Portuguese East Africa, Nyassaland, the lower two-thirds of Angola, and all former German South-West Africa. When one recollects that the world has viewed the attempts of white men to establish themselves in these areas with amazement, and has constantly and confidently predicted their failure, it comes as something of a shock

to realize that Australia has the unique distinction of having bred up during the last seventy years a resident pure-blooded white population of almost a quarter-million people under tropical conditions—a population which, moreover, follows every occupation from that of manual labour to that of the highest and most intellectual kind.

To a considerable extent this colossal experiment was accidental.

The speculation in land that went on in the early years of colonisation alienated huge areas in the State of New South Wales, and by the middle of last century prospectors and selectors were moving further and further afield. The rich lands of North Queensland, free as most of them were from drought, attracted early attention, and the discovery of many very rich goldfields, from Palmer in the far north to Gympie in the south, brought thousands of fortune-hunters to the colony.

Large sugar and banana-growing areas were taken up along the coasts, and a considerable number of natives from the neighbouring Pacific Islands were indentured as labourers. Queensland began rapidly to assume, indeed, in so far as it was colonised, the appearance of a typical "tropical country" with white overseers and massed native labour, and great numbers of speculators, prospectors, miners, and all the migratory riff-raff that infest a new land in the hope of some chance El Dorado.

Even more typical were the diseases. Malaria flourished, filariasis and hookworm disease undoubtedly then became endemic, and the records of mortality and morbidity made Queensland the "dreadful example" of the eighties.

Had one been looking for proof that the settlement

of a tropical country was impossible to white men, one need have gone no further to have found a rich store of confirmatory evidence, and most of our present day critics hark back to these primitive days for their material.

The unhappy Kanakas died in great numbers, bequeathing their diseases to their masters; the expectation of life among white males at birth was only 41.3 years—a figure more than 12% less than that of the average for Australia; and the actual crude death rates for Queensland were enormously in excess of those of other States, in one year (1884) there being an excess of as much as 50%!

With the gradual exhaustion of the mines there began a new era.

Thousands of that migratory horde that had swept into the country left it to follow their fortunes elsewhere. Thousands put what capital they had into pastoral or other pursuits, while thousands of others began to compete with the Kanaka for a livelihood as unskilled labourers, and to demand that, in the land of their birth or adoption, they should have the right to earn a living without sacrificing that standard of living that distinguished them from their competitors—the savages of the Pacific.

The decision that excluded coloured labour from Australia saved Queensland, and obviated that menace that has been so disastrous a factor in certain other countries similarly circumstanced—the “poor white.”

Since the inauguration of the Commonwealth of Australia in 1901, the progress of settlement and development in tropical Queensland has been regular and extraordinarily rapid.

The main mass of the population, in accordance with universal experience, is congregated most densely where communication facilities are greatest and where the opportunities for the importing of necessities and the export of the produce won from the soil can be most readily effected.

The great advance such communications bring with them is nowhere better evidenced than in the sugar-growing areas between Ingham and Innisfail, where thousands of immigrants have established themselves since the opening, a few years ago, of the line that now connects them with the great railway system of Australia. (This line extends from Cairns, in North Queensland, to Fremantle, in Western Australia, and touches every State capital in Australia.)

Not only have the coastal areas benefited greatly, but this increase of population and facilities has permitted a great secondary development of the Atherton Plateau—a dairying and maize-growing area as large as the whole of the arable part of the State of Tasmania and half a mile above sea-level.

II.

It is not, however, to the economic aspect of the question that the attention of the world has been directed, but to that anomaly which has been referred to above: the successful implantation of the greatest tropical colony of white men in the world in an area which by all the theories of science should be (and in the past had seemingly been) fatal to them.

The experiences of early British colonies in the West Indies, Africa, South America and India, with their appalling losses of life, are matters of every-day know-

ledge. The story of the West Indies alone is doleful reading. Three thousand British died in one small island in one year; the white man was in many localities pushed from his supremacy; youth, enthusiasm and treasure unlimited were irretrievably lost. In India, the Malay States, and many other colonies, possessions, or dependencies, the same story was repeated, until it came to be regarded as an obvious and demonstrated fact that the white man could not endure a tropical "climate."

Some even went further and quoted as a text the old canard: "He is not worth a tinker's dam on whom the snow never falls"—thus, incidentally, excluding almost all Australia and Australians, South Africa, and many other progressive lands, from the company of the elect!

When one comes, however, to discuss, piecemeal, the figures and facts on which this obstinate opinion is based, it readily appears that climate, as such, or the fact of inclusion within the geographical tropics, or even sub-tropics, has no bearing whatever on the question. The ravages of disease, such as malaria, yellow fever, dysentery, the "calentures and bloody fluxes," sleeping sickness, kala azar, smallpox, plague, and a hundred others of the same grisly company, faulty methods of living, violent excesses, and the insanitary and utterly unsuitable domestic environment instituted and persisted in by British conservatism—all these were the double-edged weapons of the destruction of the British immigrant in tropical lands.

It is amusing to-day to read the dire predictions of 1827-31 and earlier regarding the people of New South Wales. It was obvious, said the general opinion of the day, that they could never establish themselves as a

people, and absolutely imperative that at the age of 8-10 years children unfortunate enough to be born in Australia must be hurried to England if their lives and their health were to be safeguarded.

Six generations of healthy Australians have proved the absurdity of the contention.

When Brisbane (27° S.) was settled, expressed opinion became even more emphatic. It was possible, it was said, that settlement might succeed temporarily on the colder mountain areas round Toowoomba, but it was considered absurd to suppose that the white race could flourish at what was the latitude of Lorenzo Marquez, in Portuguese East Africa, or of Northern Chile, or Paraguay or South Brazil. Yet Brisbane alone has now a population of nearly 300,000 people. Rockhampton (23° S.) and Townsville (19° S.), cities of 30,000 people each, are as close to the equator as Rio de Janeiro in South America, and Beira in Portuguese East Africa, respectively, and like each of these are situated on the eastern coastline of a continental land mass. In so far as climate goes, latitudes are of little indication as between districts north and districts south of the equator, but the best of the methods of estimation of which we are aware, namely, Griffith Taylor's climographs, indicates almost identical climatic conditions for Townsville and Calcutta.

It was no wonder that people who drew their conclusions from experiences of Rio de Janeiro, Beira, and Calcutta, in the middle of last century, should prophesy disaster to North Queensland.

It was said that the white man could not exist there; that even if he could drag out an existence for a score of years he could not work, and, more especially, could

by no means perform manual labour; that he could not multiply there unless he fathered a coloured brood; and that if he did produce any white children they would be sickly, frail and sterile.

Strange as it may seem to those who know Queensland, these baseless theories are still quoted. Some, like Huntington,¹ seek to prove them by figures, others, like Haslam,² by generalisations, based on ambiguous phrases quoted outside their context.

Neither the one nor the other, however, can explain away the fact that Queenslanders of the first, second and third generations are living in our tropics healthily, thriving and multiplying, and demonstrating an entire adaptation to the conditions into which they are born or adopted.

It has been said above that in the eighties tropical Queensland was the dreadful example. It is at present the premier State in statistical vitality, and with its remarkable natural resources, its recuperative powers after bad seasons, its fertility, good harbours, numerous rivers and streams, and its relatively small population, with high wage rates and standards of living, it bids fair to become in time the premier in economic status.

How has this change been brought about? The climate has not changed, nor is the country any the less within the geographical tropics. There are but three factors which have been modified, but these factors are undoubtedly those which essentially control the ability or otherwise of a white race to thrive in the tropics. They are: (1) The successful institution of adequate measures of preventive medicine; (2) the exclusion of

1. Huntington, E., *West of the Pacific*, 1926.

2. Haslam, J. F. C., *Proc. Royal Soc. Medicine*, Vol. XXI, No. 6, April, 1928, pp. 1091-1095.

racess with lower standards of life and higher rates of disease and reproduction; and (3) the continual increase in locally born inhabitants.

This third aspect of the matter introduces an element which opponents of white settlement never admit, but which is so obvious to those who live in the country, and

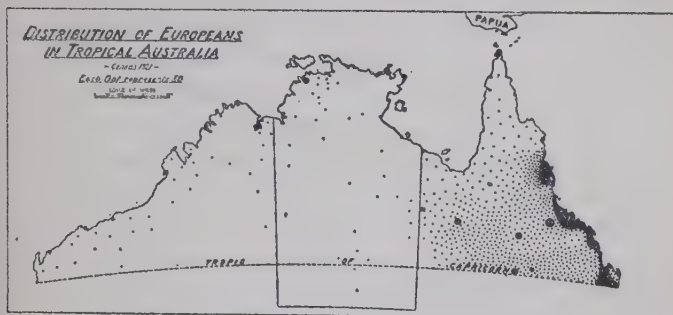


FIG. 17. Distribution of Europeans in Tropical Australia.

so in accord with all experience of biology, that it needs little demonstration. This is the process of *complete physical adaptation*, which most certainly results as a response to the continued influence on the organisms of the altered physical stimuli of these low latitudes.

It would, of course, be fatal to the supporters of the theory that the white man cannot live in the tropics to admit the possibility of adaptation, for almost all the work upon which their theory is based is drawn from artificial experiments conducted on people living in temperate or cold climates, people utterly unlike the acclimatised dwellers in the tropics; or upon exiled Britishers living exotic lives as officials, missionaries, or overseers of native labour in native countries. What possible indication of the effects of a tropical climate

upon a person born into it can be drawn from observations made on a dozen local men or women examined in steam chambers, say, in Norway!

III.

Australia's quarter-million tropical residents can afford to laugh at the endeavours of cold-weather experimenters and laboratory workers, who, like the country man who saw a live giraffe in a circus and said "he didn't believe it," gravely assure them that they are impossible. They are reassured by the fact that one of the only particulars in which tropical Queensland has a death rate higher than that of any other part of Australia, is in respect of *old age*.

One may now consider certain of those figures upon which the vitality of nations is assessed.

Let us take as the first criterion the death rate of infants under 1 year in Queensland, as compared with the same figure for Australia as a whole. Since the heaviest death rate for any age occurs within the first 12 months, and since children born in the tropics should, we are assured, be pale, sickly, and delicate, the figures for Queensland should show a very obvious excess over all other Australian States.

"In only one year of the last fifteen," says the Federal Statistician, C. H. Wickens,³ "has the rate of infantile mortality—the number of deaths under one year per 1,000 births—been higher in Queensland than the Australian average. That was in 1919, a year in which Queensland experienced a drought much severer than that experienced in other States. For the whole

3. Wickens, C. H., *Proc. Royal Soc. Victoria*, 40 (N.S.), Pt. 1, 1927, pp. 17-24.

period of 15 years the *Australian average rate was 7% higher than that for Queensland*, and the Queensland rate for 1925, of 45 per 1,000 births, is *the lowest ever recorded for an Australian State.*"

This seems to deal sufficiently with the unsupported charge made by Huntington¹ that: "Although the people who go to Queensland are so healthy (*sic!*) that they reduce the general death rate to a very low level, their children for some reason or other are less healthy than are those born in the more southerly parts of Australia or in the Old Country."

Seeing that, at the time when the immigration of these extremely "select" and "healthy" people into Queensland reached a proportion that has never been since approached, the death rate rose to be 50% *in excess* of that of the rest of Australia, one may reasonably doubt the first part of his claim, while the figures above prove that for the first year of life of the Queensland-born, at any rate, his charge is utterly untrue.

Wickens not only provides the figures for the first year, however. He is able to give data for the *first nine years* of life, and these are, even more, a definite refutation of the statement made above.

Analysing the death rates to age 9 last birthday for the years 1920, '21 and '22, the Queensland figures for each 1,000 males and females who failed to reach the age of 10, when compared to the Australian figures, are as follows:—

TABLE I.

*Failures per 1,000 to Reach the Age of 10 Years,
1920-1922.*

	Males.		Females.
Australia	106	..	87
Queensland	102	..	84

This indicates that the rate for Queensland is about $3\frac{1}{2}\%$ better than that for Australia as a whole, in both cases.

More striking still is a series collected by Wickens to cover the five triennia ending with the year 1925.

These figures show a most remarkable decrease in the failure to reach the age of 10 years among Queensland children, the number of tropically born being, of course, a continually advancing figure. The records are as follows:—

TABLE II.

Improving Experience in Respect of Failures per 1,000 of Queensland Children to Reach the Age of 10 Years.

	Males.	Females.
1911-13	116	101
1914-16	112	96
1917-19	106	88
1920-22	102	84
1923-25	87	70

The figures are not as yet available for the whole series, but when the latest results (1923-25) are compared with those for Australia as a whole, Wickens' figures show that for failure to reach 1 year (the heaviest moiety of the factor), the Queensland rate is more than 12% better than that for the rest of Australia.

It would appear, therefore, that not only is it untrue that children tropically born are becoming less and less robust, but that precisely the opposite is the case.

The mortality rate, moreover, for all ages, adults as well as children, is improving more and more with each decade.

In the eighties, has been said, when the population lived under the conditions found in other tropical lands,

and in direct competition to some degree with natives, the figures were 50% in excess of those for Australia.

The expectation of life at date of birth was then 1881-90) 41.3 years for males and 55.8 years for females. This figure has consistently improved since.

A table demonstrates the situation more graphically.

TABLE III.

Expectation of Life at Date of Birth.

Decade.	Males.		Females.	
	Q'nsland.	C'wealth.	Q'nsland.	C'wealth.
1881-90 ..	41.330	47.199	49.754	50.844
1891-00 ..	49.512	51.076	55.800	54.756
1901-10 ..	54.203	55.200	59.294	58.837

Wickens, from an examination of the figures for the three years 1920-22 (which are as yet not generally available), assures us that there is evidence that the Queensland expectation of life *will exceed* that for Australia, so that the mortality experience of Queensland has been continuously improving, both absolutely and in relation to the Commonwealth as a whole, for the last 45 years.

Moreover, if we take the figures for Queensland for (a) death rate, (b) infantile mortality, and compare them with those of the so-called "ideal" climates, we find the following:—

TABLE IV.

Comparative Death Rates and Infantile Mortality Rates in Various Countries.

Country.	Death Rate.	Infantile Mortality.
Queensland	10.4 ..	63
Netherlands	12.3 ..	91
Denmark	12.5 ..	94
Norway	13.2 ..	65
Sweden	13.6 ..	70

England and Wales	13.8	..	108
U.S.A. (Registered Area)	14.1	..	—
Switzerland	14.3	..	96
Belgium	14.8	..	120
Germany	15.0	..	151
Scotland	15.5	..	110
Ireland	17.1	..	97

(These figures are drawn for the year 1913, but any year evidences the same general features.)

The next charge made against tropical Australia is, that even though men may possibly thrive, women do not do so, and that they are infertile in comparison with their sisters in other States, and that as much as possible they escape from Queensland in adult life and seek a less disastrous climate elsewhere.

This argument is similarly fallacious and utterly opposed to facts and figures. At the census of 1921 the average issue at every age was markedly higher in Queensland than in the rest of Australia.

Wickens produces in this regard the following extremely useful and conclusive table:—

TABLE V.

Average Issue of Wives Resident in Australia at Census of 1921.

Age.	Queensland.	Australia.	British Isles.	Europe.	All Birth Places.
25-29	1.98	1.84	1.32	1.36	1.78
30-34	2.86	2.66	2.04	2.09	2.59
35-39	3.69	3.44	2.70	2.76	3.32
40-44	4.36	3.97	3.30	3.36	3.84
45-49	4.74	4.30	3.75	3.84	4.19
50-54	5.30	4.64	4.28	4.36	4.57
55-59	5.92	5.21	4.79	4.88	5.12
60-64	6.71	5.93	5.28	5.37	5.74
65-69	7.38	6.61	5.80	5.88	6.25

When these figures are further examined in respect of Queensland-born wives as compared with wives merely Queensland-resident, there is a higher issue in favor of the former, a finding directly refuting Huntington's theory that birth in Queensland affects fertility deleteriously.

In order to offset the fact that not all Queensland is tropical, though it is all above 29° S. latitude, and the area between Brisbane and Townsville corresponds therefore to German South-West Africa and other admittedly "tropical," "enervating," and "fatal" areas, the issue of all wives resident in tropical Australia was compiled in terms of their birth-places. The table provided by the Federal Statistician may be said to dispose very effectively of any question on the subject, since it demonstrates that up to the age of 60 wives in Queensland produced greater issue than any other series, and up to the age of 65 the average issue for *tropical Australia* exceeds that for *all Australia*.

In 1924, at the instance of Dr. J. S. C. Elkington, Director of the Division of Tropical Hygiene, Commonwealth Department of Health, the writer undertook an investigation into the sociological conditions (and their effects) of white residents in tropical Queensland. To avoid any possibility of the investigated population being regarded as specially selected, a fixed percentage of the total households in each area was taken at random and all persons of extra-tropical birth were used as a control series.

The field work was performed by a trained observer, Miss A. Gorman.

As there are three distinct climatic divisions in tropical Queensland, namely, the hot, moist coastal belt,

the more temperate coastal plateaux, and the hot, dry inland plains, these were separately considered.

The results are set out as follows:—

TABLE VI.

Issue of Children Born to Mothers in Tropical Australia.

Place.	Mothers Born in Tropical Australia.			Mothers Born in Extra-Tropical Australia or Elsewhere.		
	No. of Women	Average No. Chil- dren.	Average Age of Mothers.	No. of Mothers.	Average No. Children.	Average Age of Mother.
<i>Hot, Moist, Coastal Belt:</i>						
Townsville	215	3.8	36 10/12	294 (a)	4.1	40 9/12
Cairns	139	4.2	35 6/12	104 (b)	4.1	41 6/12
<i>Coastal Plateaux:</i>						
Atherton	39	3.2	32 8/12	49 (c)	3.5	39 4/12
Charters Towers .	65	4.1	41 4/12	77 (d)	6.0	40
<i>Hot, Dry, Inland Plains:</i>						
Cloncurry	71	4.0	33 0/12	47	4.2	42 7/12
Julia Creek . . .	15	4.4	32 2/12	11 (e)	2.3	28 1/12

N.B.—(a) Approximately 50% resident in tropics 10-20 years or over.

(b) Approximately 80% resident in tropics over 20 years.

(c) Only 6.6% resident in tropics less than 10 years.

(d) All resident in tropics 28 years or over.

(e) All resident in tropics 13 years or over.

It will be seen from the figures above that when corrected for age (the issue of a person at date of examination is, of course, a function of age) the women of the tropics, tropically born and tropically resident, show no decrease of fertility whatever.

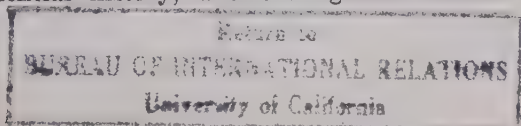
Huntington's further statement with regard to the alleged tendency for Queensland women to escape the deadly climate when possible is equally absurd—a survival of the canard mentioned above that the young and the old do not exist in Queensland, but only a specially selected, super-healthy group of hardy pioneers, who exploit the country in the hey-day of their

vigour and then creep away to other States to die, exhausted by climatic conditions!

"The number of Queensland-born persons recorded at the Census of 1921 in States other than Queensland," writes Wickens, "was 42,953, of which 20,142 were males and 22,811 females. In other words, at the Census of 1921 about $9\frac{1}{4}\%$ of the Queensland-born females resident in Australia were living outside their State of birth, and about $8\frac{1}{4}\%$ of Queensland-born males. These proportions for residence outside their State of birth are less than for any State of birth except New South Wales, the average for all Australia being $11\frac{1}{2}\%$ for males and $10\frac{3}{4}\%$ for females." Precisely the same condition of affairs is found in the previous Census for 1911.

When we turn to the figures for mortality to determine whether residence in the tropics has a deleterious effect upon white women, we find no evidence of any sudden drop in the expectation of life among females, but, instead, the same regular figure that we find elsewhere is maintained. In fact, the figures for Queensland for 1901-10, compared with those of Australia for the same period (59.294/58.837), and the figures for the incomplete cycle in process of compilation by the Federal Statistician at present, are definitely in favor of the Queensland woman as against the whole Commonwealth.

As to children, the investigation undertaken in North Queensland, and mentioned above, included the examination of 2,080 school children drawn at random from the schools of the townships visited. The children were divided into four groups, in accordance with their natal and residential history, and the figures obtained in-



cluded details of height, weight, head and chest circumference, mentality, defects, and general nutrition. The weight of the children was equal to that of southern norms; the height, if anything, was slightly greater, age for age, up to puberty; there were no signs of mental deterioration, and no differences were apparent between immigrants, first generation and second generation children. It might be said that there was nothing whatever to distinguish them from southern children.

On the ground of a climatic barrier, therefore, the opponents of the white settlement of tropical Australia are fully controverted by statistical records.

IV.

The figures presented above leave no loophole for the most ingenious exponent of the old theory. They prove definitely that the white man can live and thrive in the Australian tropics; that the white woman can accompany him without any loss of fertility, mentality or physique.

In this dilemma various arguments have been invoked to carry on the contest of opinion versus established fact.

It has been asserted that the white man cannot perform work to the standard essential to economic production, and that it is the Britisher who is the least able competitor in this respect against foreigners of all grades of colour and race.

An attempt has even been made to explain away the excellent figures established for tropical Australia, by claiming that they are drawn from foreign populations, especially Sicilians and Greeks, whose home country is "sub-tropical."

This assertion is as obviously unsound as any other of the arguments advanced. The total foreign population of all tropical Australia is less than 10% of the whole, and is of the most recent introduction. The figures for first and second generation children, issue and fertility of tropically born mothers, etc., are absolutely unaffected by any foreign influx, since 97% of the population from which they were drawn was, prior to 1920, pure British. From the Townsville series of figures foreigners were specifically excluded.

The foreign population is predominantly north Italian, the great bulk of these immigrants being Italians of Teutonic or mixed Dinaric origin from Lombardy, Piedmont, etc. The suggestion that these would react differently to the English, Scotch, Irish and Welsh argues a faulty acquaintance with ethnology; while if it be so suggested because of the warmth of their homeland, it is to be remembered that the whole of Australia is hotter and nearer the Equator than any but the most southerly parts of Europe, and that Milan, the home city of some 70% of the Italian immigrants, is 45° N. of the equator and near the slopes of the Alps, a latitude corresponding here to the most southerly border of Tasmania or of the South Island of New Zealand.

The present cessation of all immigration from Italy, except a residual stream of the relatives of those already established here, will permit of the entire absorption of this foreign strain in 20 years, just as similar circumstances permitted the assimilation of the foreign influx of the eighties.

As to the working capacities of various races in the tropics of Australia, a Queensland planter of 20 years'

experience (C. V. Hives), who has worked every type of labour available, including Englishmen, Italians, Greeks, Spaniards, Russians, Maltese, Teutonic and Scandinavian groups, Chinese, Japanese, Indians and Kanakas, states without hesitation,⁴ and from the carefully kept records of the sugar plantations and mills, that the British gangs (*i.e.*, tropical Australian and immigrant Britishers) head the list for physical fitness and endurance.

Though the toughest and speediest of the cutters, they are, however, like their forebears, the most independent and the least docile. On this account in some areas, preference has been given to men of other nationalities, and a popular but erroneous idea has arisen among tourists, who occasionally visit the fields of large company concerns, that the foreigners seen working there have been selected on account of a superior fitness for the climate.

It was confidently predicted that with the exclusion of the Kanaka the death knell of the sugar industry had been sounded. In the last year of native labour (1905-06) the yield of sugar was 152,259 tons. In 1926-27 there were produced 492,000 tons, of which 340,000 tons were required for home consumption. Every ton was grown, cut, and milled by white labour.

Not only is this the case, but white intelligence has in many ways improved the system of sugar growing and milling. By mechanised aids, the white man can cut and carry $4\frac{1}{2}$ tons in comparison with every ton formerly cut by a Kanaka, and by the system of payment by results, introduced in 1915 for cane, it now takes fewer tons of cane to produce a ton of raw sugar

4. Cilento, R. W., *The White Man in the Tropics*, pp. 71-72.

in Queensland than it does in any other part of the world. In 10 years the local improvement in this regard has equalled 25%, and South Africa, Rhodesia and other countries have profited by our experience and guidance in these matters.

As to working efficiency in other pursuits, Breinl⁵ collected information from the different shipping companies of the North Queensland coast as to that most arduous employment, wharf lumping, and established the fact that only in a few of the very hottest months of the year (and in these only on certain extremely dry, hot days with northern winds) was the summer efficiency lower than the winter efficiency, and then only to the extent of 11%. It would be interesting to compare the figures with the "time-lost" records of any European or North American country.

At a recent conference in England it was stated that 100,000 years of work were lost annually in that country from the one disease of rheumatism, while the influence of respiratory diseases directly referable to climate is amazing in that and similar countries.

In the United States of America recent reports by the Public Health Service Authorities showed that more than one-half of all absences over a 10-year period in a large electric light and power company were due to respiratory disorders, while of all diseases involving absence from work for eight days or more, among the records of 35 different sick-benefit associations from 1921-26, 47% were of the same type. These associations make payments only when illness causes inability to work for eight days or longer, so that a vast number of minor disorders and losses of time are unrecorded. Even so, time lost amounts to six days per man per

5. Breinl, A., *Medical Journal of Australia*, 16th April, 1921.

year. The incidence, it is pointed out, is directly related to the cold and wet season of the year, reaching its maximum in February.

In the foregoing almost the whole weight of the argument as to the white settlement of tropical Australia has been devoted to the question of the white man's physical ability to colonise that area. This has been deliberate, for, in effect, that question embraces the whole problem. The fertility of great tracts of the country is long since established, and while one admits that large areas are, as yet, too distant, too barren, or too little developed to permit settlement by any race, one is comforted by the reflection that similar great empty spaces occur in Asia, North and South America and Africa. The great empty intermediate hinterland common to China, Siberia and Tibet is alone greater than the whole of the sparsely populated areas of Australia, both tropical and temperate.

In the million square miles of tropical Australia there are enormous tracts open to settlement and colonisation. There are, as yet, economic disadvantages, there are foci of tropical disease, there are all the barriers interposed by the primitive conditions which confront all pioneers, but climate alone presents no barrier.

The *ex cathedra* opponents of white settlement, brought face to face with statistical evidence of the nature of that outlined above, have taken refuge in obscurity, and have asserted that "centuries rather than generations may pass before conclusive results can be obtained." This may be true, one might suggest "geological ages"; it is, at any rate, a safe line of retreat. One may summate the evidence in the words of Wickens, who claims attachment only to the exact

science of mathematics, and who says: "The data available in this connection (*i.e.*, the question of the 'further extension of white population into the tropical portions of the State') are of such a nature as to warrant expectations of satisfactory progress."⁶

6. Breial, *op. cit.*

CHAPTER X.

THE OPTIMUM SIZE OF POPULATION.

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- I. Consideration of the Economic Optimum.
- II. Population and Productivity.
- III. Facilities for Co-operation.
- IV. Natural Resources in Relation to the Optimum.
- V. Effect of Large Scale Production.
- VI. Capital in Relation to Population.
- VII. Influence of Increased Population Upon the Other Factors.
- VIII. Non-economic Consideration.

I.

It is clear that, from an economic standpoint, a country may contain either too many or too few people. Under any given set of conditions there is some number which would be neither too large nor too small, but just right. That number is termed the *optimum*.

It is, of course, an economic optimum. When non-economic considerations are taken into account the number which is, on the whole, most desirable may be either larger or smaller than the optimum. Further, it is the optimum only under those conditions. As conditions change, the optimum itself may change. The main purpose of this essay is to consider this conception of a static economic optimum, with special reference to the case of Australia, under present conditions.

The standpoint adopted will be the purely national one of Australia. The interests of Australia, regarded as a national group, may diverge at certain points from those of the world as a whole. It does not follow that in all such cases Australia should pursue an entirely selfish policy, studying only her own interests. But it is desirable that, if sacrifices are to be made for the welfare of the Great Society as a whole, their nature and extent should be clearly realized.

The leading instance of such a possible conflict arises in connection with immigration. Given the present world population, it is desirable from the world standpoint that it should be distributed over the surface of the earth in the best possible manner. Undoubtedly the present distribution would be improved—apart from complications associated with racial and other differences—if Australia contained more people and certain other regions contained fewer. For example, Professor Griffith Taylor has estimated that if Australia were as “saturated” as Europe is to-day she would have a white population of some 60 millions.¹ “Saturated” here seems to imply “relatively to *natural* resources.” If all resources and all acquired advantages were considered, the estimate might be lowered. The question of the additional capital and the changes in organisation which such an increase in numbers would necessitate is important, but need not be considered here. The point is that Australia, with less than seven millions, is certainly what Professor Mises would call *relatively* under-populated. It would be to the advantage of the world group to transfer some of its members to Australia. But such a course might be against the interests

1. *Australasian Association for the Advancement of Science*, Vol. XVI (1923), page 484.

of Australia, and it is the standpoint of Australia which will be taken in this essay. In other words, it is only *absolute* over—or under—population that will be discussed.

Most economists would agree that the optimum is that number which will give the greatest average economic welfare per head. This concept is better than that of the "highest possible standard of living," for the latter may be attained by sacrificing possible leisure or greater steadiness of incomes and employment or, temporarily, by borrowing from abroad or by making inadequate provision for the future. Nevertheless it is a concept surrounded with difficulties. The magnitude of economic welfare is almost always, in fact, taken to be determined, or measured, mainly by certain objective *indicia*.² The next step is to consider the optimum in connection with the most important of these *indicia*.

The most important determinant of economic welfare is production. The optimum may therefore be considered, to begin with, as that number which gives the maximum productivity per head.

At present it is impossible to show conclusively that the actual numbers in any country, at any time, are above or below the optimum. No sure tests of over—or under—population have yet been discovered. The difficulty is to isolate the influence of numbers from the influence of countless other factors operating simultaneously upon productivity per head. This difficulty is so great that it is doubtful whether any certain tests can ever be devised. The best course, and, indeed, the only possible course, is to resort to economic theory; to

2. See my *Prosperity of Australia*, Ch. I, for a discussion of this.

display the effects of numbers isolated and disentangled from the effects of other factors, by general reasoning and then, upon the basis of such reasoning, to draw tentative conclusions for any given country, under given conditions.

II.

Let us therefore consider an area upon which the population may be hypothetically varied, between zero and infinity, and try to determine the position of the optimum. Our assumptions, however, must first be stated. The quantity of population alone will be supposed to vary, all other factors whatsoever remaining the same, except two: capital and, in a restricted sense, organisation. It will be supposed that a population of any given size is somehow supplied with capital adequate to its size. It will also be supposed that changes in organisation, apparently necessitated by altered numbers, do occur. I have in mind such changes as that involved by greatly increased numbers in an agricultural area, from more extensive to more intensive cultivation. Further, I think a larger population may be supposed to use specialised machines and other forms of capital, which, although (like intensive methods in agriculture) of course known to a smaller population, would yet not be worth while until numbers exceeded a certain level. But all other factors, such as the age-sex-and-race-composition of the population, its average economic quality, the proportion of workers to non-workers, working conditions, and the state of knowledge, must be deemed constant. Later we shall return to these assumptions.

Let us suppose, in the first place, that the area is an island containing one million equally fertile areas.

Strictly, we are concerned only with the working population, which is deemed to be a constant proportion of the total. Suppose that one thousand acres, including allowance for fallow, is the area from which one man could obtain the maximum annual produce. Clearly, with a (working) population of one, productivity per head would be unaffected if 999,000 acres disappeared into the sea. There would be no effective diminution of land per head until the (working) population exceeded one thousand. As our hypothetical population varied upwards from one thousand, effective diminution of land per head would be a factor tending to lessen productivity per head. But it would not be a factor which operated with uniform strength as population increased, even under the static conditions assumed. More intensive methods of agriculture could be adopted as they became more suitable for the increased numbers. In the case of a large area, land previously devoted to cattle and sheep, but fairly suitable for agriculture, could be turned to the latter use, thus causing more food to be produced from that land and more persons to be employed upon it. But after recourse had been had to such expedients, diminution of land per head due to still further increase of population would operate strongly and adversely upon productivity per head.

In practice, all areas would not be of equal fertility. Suppose that half the island consisted of inferior land, upon which a 2000-acre farm would yield the maximum product to one man—a product equivalent to that of a 1000-acre farm upon the better land. Effective diminution of land per head would then begin when the population exceeded 750—500 upon the better land and 250

upon the worse. Average yields *per acre* would diminish when the population exceeded 500, but that would not matter at all. An acre is not a unit of resources: it is merely a unit of area, and the relevant fact is not productivity per acre, but productivity per man. This fact has some application to the economic problems of Australia. For example, given the population, the problem is that of using the total labour force to produce the greatest possible product. Productivity per man might perhaps be increased by employing more men in agriculture and fewer in manufacturing. The fact that such a change might involve lower average yields per acre is quite irrelevant; the question is whether the marginal men would produce more per head in agriculture or in manufacturing. Again, a large increase in the numbers engaged in agriculture, coupled with a transition to more intensive methods, would probably increase yields per acre, but if productivity per man diminished, *cui bono?*

In practice, further, the position would be still more complicated. Some land would not be worth using at all, despite very large increases in population, whilst some land would be suitable only for sparse pastoral occupation. Thus, given a comparatively large population, the maximum product might well be obtained by concentrating almost the whole of the population upon the better land, leaving the worse land almost unoccupied. This, too, applies to Australia. In the present state of knowledge, nearly one-third of Australia is "practically useless," and another third is suitable only for sparse pastoral cultivation. Over half the total area, mainly on account of its inadequate and unreliable rainfall, contains less than one-three-hundredth of the total population. It seems certain that

the present regional distribution of population would still be the best, even if the population were double or treble its present size.

The transition from "land" to "natural resources" is easy. Suppose, for example, that our island possessed two coal mines, in one of which the seams were richer and more accessible than in the other. With increase of population, it might well be better to employ more workers in the richer mine rather than to begin exploiting the other. All this illustrates the fact that the best population, from the economic standpoint, is not the population which can make the fullest, or, indeed, any, use of all the natural resources. The best population for Australia is not one large enough "to fill up our empty spaces" or "to exploit all our mineral wealth." It is one which gives the maximum productivity per head. Similarly, the economic aim of statesmen should not be "the development of the continent." The land has no wants, no feelings, about which we know or care; the land exists for the people, not the people for the land; the aim should be the greatest possible economic welfare per head.

III.

So far we have considered one important factor, effective diminution of natural resources per head, which operates adversely upon productivity as our hypothetical population increases beyond a certain point. We must now consider another factor which operates in the opposite direction. It may be termed facilities for economic co-operation.

Economic co-operation involves the specialisation of persons, of areas, and of capital. The advantages which arise from the specialisation of persons into different

occupations and sub-occupations have often been enumerated, and need not be repeated here. The same remark applies to the specialisation of areas or localisation of industry. It should be remembered that co-operation includes co-operation with other countries, involving foreign trade. The advantages of specialisation of capital, however, warrant a little discussion.

Any specialised machine would serve as an illustration. A machine for folding circulars, for example, becomes worth while only when the firm possessing it sends out a fairly large number of circulars per week. Scores of machines, each performing a different operation in the manufacture of a motor-car, become worth while only when the output of motor-cars per year exceeds a certain number. "Standardisation," with all its advantages, becomes economically advisable only when the annual output of the standardised commodity is fairly large. The construction of a specialised machine calls for a certain amount of effort. The return is a comparatively small saving of effort in connection with each economic act performed by the machine. The construction of the machine is clearly not worth while unless it is kept sufficiently occupied during its lifetime to return more than the original expenditure of effort: "to pay for itself." The same principle applies to such forms of capital as roads, bridges, and railways. If railway lines have, in fact, been laid, then the greater the volume of traffic carried upon them the better; the original expenditure is spread over a greater number of units of output, although in this case the output is of "services" and not of goods. Similarly with the heavy "fixed capital" concerned in supplying such utilities as water and sewerage, gas and

electricity, harbour and dock facilities. Broadly speaking, the more fully such fixed capital is kept in use the better.

It is clear that as our hypothetically varying population increases (implying a greater demand for, and therefore a greater output of, different goods and services) it will be able to take fuller advantage of economic co-operation. Up to a point, the disadvantage of decreasing natural resources per head will be outweighed by the advantage of increasing facilities for co-operation. Beyond that point, however, the former factor will outweigh the latter. That point is the static productivity optimum.

We have suggested that beyond a certain stage (at which most land suitable for intensive agriculture is used for that purpose) the unfavourable influence of diminishing natural resources per head operates strongly as population continues to grow. I shall now suggest that beyond a certain stage (not necessarily, of course, the same stage as above) the advantages of greater facilities for co-operation increase only slowly with increasing population.

Under the static conditions assumed, it seems clear that after our hypothetical population had attained a certain size, further increase would involve little further specialisation of persons. Instead of new occupations being created, there would simply be more persons in each existing occupation. An apparent exception to this would be found in the growth of so-called "occupations," such as those existing by the score in a modern cotton factory, connected with the employment of more specialised machinery. The advantage in such cases, however, is best attributed to greater

specialisation of capital. The fact that, at any time, fuller advantage could be taken of the varying capacities of individuals by a less unequal distribution of the National Income, and by making more use of vocational guidance and selection, is, of course, irrelevant to our problem.

Again, after a certain degree of localisation of industry has been attained, further growth of population will clearly tend towards duplication rather than towards a greater degree of localisation.

The advantages arising from specialisation of capital will continue to increase at an appreciable rate, with increasing population, after further growth has ceased to bring much additional advantage from specialisation of persons or of areas. But these, too, will increase but slowly after a point. There will come a stage when further growth of population implies duplication of machines for folding circulars rather than the fuller use of an existing machine, additional railway lines, when existing ones become inadequate to cope with the extra traffic, extra ships, lorries, and trucks (of the most economic size), rather than fuller ones, and so on.

IV.

In view of these considerations, it is my opinion that most countries of the world, under present conditions, are over-populated in the sense that if their numbers were fewer their productivity per head would be greater. They seem plainly to have passed the stage at which greater numbers are attended, on the one hand, by marked unfavourable effects, due to diminishing natural resources per head, and, on the other hand, by what I have termed "duplication" rather than by appre-

ciably greater advantages arising from increased co-operation.

I do not think, however, that this applies as yet to Australia.

On the one hand, a considerable increase of population would not necessarily involve a serious effective diminution of natural resources per head. Professor Griffith Taylor classifies 21% of Australia as "fair temperate farming country." Excluding half of this as too rugged, and half the remainder as too poor in soil or too far from transport facilities, 5% remains. At present only 1½% is devoted to agriculture. The present area, therefore, could be trebled without bringing under cultivation any land much less suitable than that at present under crop. Expert opinion generally confirms this estimate as moderate. But this additional land is not lying idle. Much of it consists of sheep stations. Hence such a change would involve the subdivision of these stations into smaller holdings, upon which crops, and especially wheat, would be grown, or "mixed farming" (including perhaps wheat and sheep) carried on.³ Australia contains 165 million metric tons of coal: more per head than any other continent except North America.⁴ It seems probable that a greater annual output than at present could be obtained for many years to come without exerting much greater effort per head than is required to-day. The outlook is not so bright in connection with other natural resources, but under present conditions land and coal have a predominant importance.

On the other hand, a considerable increase of population would certainly enable fuller use to be made of

3. *The Prosperity of Australia*, p. 230.

4. *Ibid*, p. 258.

existing railway lines, roads, bridges and of the "fixed capital" mentioned above, concerned in supplying such utilities as water and sewerage, gas, electricity and harbour and dock facilities. For, in the case of Australia, a considerably increased demand for the services of such "fixed capital" could be supplied by existing plant and facilities, and only a relatively small increase in such capital would be necessary. The gain would show itself, on the surface, in such forms as reduced fares and freights, and profits rather than losses on public works and utilities.

In view of these considerations, I am inclined to think that the optimum is somewhere between 10 and 15 millions—about double the present numbers. The assumptions involved in this guess—for it can be nothing more—should be remembered. It is assumed that the additional population is somehow supplied with additional capital; that changes in the economic organization rendered strongly advisable, if not imperative, by the increased numbers, are made; that the present regional distribution of the population, with its concentration in the capital cities, continues; and that all other factors remain the same.

Some support is perhaps afforded to this guess by the economic history of Australia during the present century. Between 1901 and the outbreak of war productivity *per worker* increased rapidly, taking "good" and "bad" years together, by something like 30 per cent. During the war, of course, it fell; but since the war it has been rising, and has attained a higher level than ever, despite a considerable reduction in working hours per week. Why? Conditions do not seem to have altered fundamentally during this period, as (owing

largely to the developments in transport) they altered during the nineteenth century. No European country can show a similar record. Progress in the United States is apparently due largely to improvements in management and organisation and willingness to work, which are admitted not to have occurred in the same degree in Australia. At the first blush, the comparatively large natural resources and comparatively small population of Australia may be offered as a partial explanation. But at the beginning of the century natural resources were just as large and population less. The progress may be partly due to a closer approximation, as population has increased, of actual numbers to the optimum. With both numbers and productivity per worker increasing (despite factors such as decreasing working hours and increasing Protection, which seem to operate unfavourably to productivity), it seems possible that the optimum at present is greater than the actual numbers.

V.

A word may be added about "large scale production," since it is often alleged that a larger population in Australia would enable the "scale of production" to be enlarged, with favourable effects upon productivity. For purposes of discussion, it seems advisable to consider this somewhat vague concept of "large scale production" under at least four headings.

In the first place, there is the question of localisation of industry and the "external economies" which it makes possible. It seems very unlikely that a larger population would lead to a greater degree of localisation in Australia. Most of the manufacturing, to take the chief instance, is already concentrated mainly in a

few cities, and especially in Sydney and Melbourne, whilst, again, nearly half the oversea trade of the Commonwealth passes through the port of Sydney.

In the second place, there is the question of comparatively large industrial units, such as factories. Under given conditions, there is a "best" size for the typical factory in each separate industry. At present Australia possesses scores of "factories" in almost every separate industry; in most industries dozens of factories exist in the same industry and the same city, almost side by side. It seems clear that the same capital could have been used to produce fewer and larger factories. In fact, growth of population has not implied a corresponding growth in the size of the average factory. The average number of hands per manufacturing establishment actually decreased between 1912 and 1924. The conclusion must be that if larger industrial units are desirable, the need is for better organisation rather than a larger population.

In the third place, there is the question of comparatively large business units, such as companies or trusts. But the advantages of a large business must often become greater as it approaches towards monopoly, and monopoly can be approached just as well with a given aggregate output as with twice that output. In other words, a larger population may make advisable larger business units, but the appropriate size for a given class of business is a function of the population rather than *vice versa*. In the case of a factory, technical considerations (such as the use of specialised machinery) may make a large factory advisable, provided the demand for its product is sufficiently great. But the adjustment of supply to demand, the elimination of com-

petitive advertising, and similar advantages, do not relate to the *absolute* size of a business unit, but to its size *relatively* to the population and to the aggregate output of the goods which it controls.

In the fourth place, there is the question of economies in marketing: in distributing and selling goods. These economies are often claimed to increase as population increases. The fact that recent years have witnessed, in most countries, a growth of population, accompanied by an increase in the proportion of workers engaged in such activities, does not necessarily disprove this claim: other factors may have been tending in the opposite direction. It is true that an aggregation of a million people in a few square miles can be supplied more economically than a million people scattered over thousands of square miles, but is it true that an aggregation of two million people (in Sydney or Melbourne, for example) can be supplied more economically than one of one million? The latter is the practical question for Australia. Probably the greater numbers would involve advantages of the type already discussed in connection with railways and other "fixed capital." But waste such as that illustrated in the old example of different milk-carts in the same street can clearly be overcome just as well in a small city as a large; it is a question of organisation rather than of numbers.

The conclusion is that any real advantages due to a larger population have already been dealt with under the heading of "co-operation," involving the fuller use of existing fixed capital.

VI.

We must now return to our assumptions. We have supposed that as population hypothetically varies

over time, any given population is somehow supplied with capital adequate to its size, and that changes in organisation which the altered numbers necessitate, or even make strongly advisable, do, in fact, take place, all other factors remaining the same. "Capital adequate to its size" is a vague phrase. I had in mind the application of the theory to existing populations, under the assumption that a supposed larger or smaller population would be just as well supplied with capital relatively to its numbers, as the existing one. This is not quite the same as the assumption that "capital varies in the same ratio as population." A given quantity of railway lines, for example, might be just as adequate for a larger population as for a smaller one.

An alternative view, more in keeping with tradition, is that the population alone should be assumed to vary instantaneously, all other factors whatsoever, including capital and organisation, remaining constant. This view has recently received the able support of Mr. Robbins,⁵ although he realises the difficulties which it involves. Under this view, for example, a population P with capital C and organisation O would be compared with another hypothetical population P_1 , again with Capital C and organisation O. Under our assumptions a population P with capital C and organisation O would be compared with a population P_1 , with capital C_1 and organisation O_1 . The course urged by Mr. Robbins enables effects due to changes in numbers to be completely isolated from effects due to other causes. On the other hand, our assumptions allow for the fact that the effects due to changes in numbers may include

5. In his illuminating article, "The Optimum Theory of Population," in *London Essays in Economics*.

changes in capital and in organisation; that the changes from P to P_1 may inevitably involve a simultaneous change from C to C_1 and from O to O_1 .

Mr. Robbins warns us that, in fact, capital may not increase in the same ratio as population. This warning, however, involves an appeal to reality. Upon the test of approximation to reality—which is by no means conclusive—our assumptions make a better showing than those of Mr. Robbins. Although populations may vary almost instantaneously, owing to such factors as migration, famines, plagues and wars, yet in fact they usually vary over time. In reality, capital is more likely to vary with population—although not necessarily in the same ratio—than to remain constant. A considerably larger population usually implies a larger aggregate saving, whilst a considerably smaller population would probably find the effort of providing renewals, replacements and repairs to all existing capital either impossible or not worth while. In reality, organisation varies in consequence of a change in population. A much larger population in a purely agricultural area, for example, would inevitably involve more intensive cultivation. Indeed, it is difficult to conceive both capital and organisation remaining, in any real sense, unchanged. Suppose, for example, a given number of factories and a great reduction in numbers. Either there must be fewer persons to each factory, which is surely a change in organisation, or else some of the factories must remain unused, which is in effect a diminution of capital.

Another point is that Mr. Robbins' assumptions weight the scales too heavily against a larger population than the existing one. If the economic organisation,

adapted to a population somewhere near the actual size, is to remain constant, then any large increase in numbers will involve grave unemployment. Similarly with capital: if, for example, a hypothetically increasing population is assumed to possess a constant number of houses, the services rendered by those houses will provide a diminishing contribution per head to production as the population becomes larger. Again, imagine any existing population to double with only the same stock of buildings, machinery and other capital as before. On the other hand, a somewhat smaller population than any existing one would probably gain more by the greater capital per head (implying a greater income per head from foreign investments in the case of a creditor nation such as England, although involving a greater burden per head for interest payments upon external debt in the case of a debtor nation, such as Australia) than it lost in other ways. Thus the view in question, when applied to practice, would seem to render most unlikely an optimum much in excess of the actual numbers.

Nevertheless, our own assumptions involve difficulties. As Mr. Robbins points out,⁶ it is difficult to distinguish between changes in organisation necessitated by changing numbers and changes due to other causes. The same remark applies to capital. A stationary population P , for example, may increase its capital from C to C_1 . It is conceivable that during a period an increase from P to P_1 (due, for example, to the arrival of capital-less immigrants) may not have caused the increase in capital from C to C_1 : it is conceivable that such an increase would have occurred in any event, all

6. *Op. cit.*, p. 123 note.

the saving being performed by the original P. In such a case the true comparison is between P and P_1 , given C_1 , rather than between P, given C, and P_1 , given C_1 , as is the case under our assumptions. Other difficult points have been mentioned by Dr. Dalton in the course of a most important and valuable article.⁷

All that is claimed is that in some cases it may be advisable to make certain assumptions, whilst in other cases different assumptions may be more appropriate. In some cases, for example, it might be advisable to conceive changes in population as involving consequential changes in age-composition and knowledge, as well as in capital and organisation. For other purposes the course advocated by Mr. Robbins seems undoubtedly the best. And for the purpose of this essay the view which has been taken seems to me the most suitable.

8. Under static conditions, with all prices remaining the same, the number which gives the greatest productivity per head would give the greatest real income per head.

The notion of average real income per head applied to a nation, however, involves the question of exactly what collection of persons is deemed to constitute the nation. A simple hypothetical case will serve to illustrate the point. Call the present inhabitants of Australia A, and suppose a group of immigrants I, of lower average efficiency than A, to arrive. Suppose that I is allowed to settle upon Crown land previously uncultivated, paying a rent for its use, and forming a self-supporting little community. The average income of A per head is thereby slightly raised. The average income of I per head is probably higher than it was

7. In *Economica*, March, 1928, No. 22, p. 43.

before in their country of origin. Yet the average income (of $A + I$) per head may well be lower than that of A per head was before the arrival of the group. In that case has the average income per head of "Australia" increased or decreased? And would it make any difference whether the immigrants were Chinese or Italian or British? Although the income of every individual concerned may be greater than before, yet if the immigrants are permanent settlers, who will be considered as residents of Australia, I think it would generally be held that the average income per head of Australia had diminished.

In practice, the similar gain to A , as a group, which arises when I performs services for less than their market value, is obscured by the fact that the gain is not distributed evenly over the group. Only the comparatively well-off families, for example, would gain by an influx of competent "coloured" domestic servants at lower wages than those prevailing, and despite the consequent extension of demand for domestic servants some "white" butlers and housemaids might be compelled to accept lower wages or to seek employment in other occupations. Similarly with foreign labour—cheap per unit as well as per week—employed in industry. The loss from unemployment and from a change in distribution in favour of employers and shareholders might or might not outweigh the gain to the community as a whole from obtaining services at less than their market value. But as on the surface the gain would accrue only to a minority of fairly rich persons, whilst the wages and employment of Australian workers would be threatened, such an influx would be considered unequivocally harmful. If, as is quite possible, employers

thought the foreign labour was cheaper per unit of output, whilst it was really dearer, owing to its lower efficiency, there would be a distinct loss. Considerations such as these afford a practical economic basis for the White Australia Policy. In theory, of course, such complications are evaded by the assumption that the economic quality of the population remains the same.

VII.

Productivity is the chief but not the sole determinant of economic welfare. A few comments may be made concerning the influence of varying numbers, under static conditions, upon other determinants.

If capital is assumed to remain the same, an increase of population will raise the value of a unit of capital relatively to that of a unit of labour. Although, if the actual numbers approach more nearly to the productivity optimum after the change, this may not lead to lower wages; it will, nevertheless, tend towards greater inequality of incomes. To that extent this is an argument in favour of reducing rather than increasing numbers. But here again it seems better to suppose that capital increases with population, and so to avoid weighting the scales by making an assumption usually inconsistent with the facts.

One effect of an increase in population, especially notable in Australia, is to raise land values, thus benefiting a special class—landowners—more than the rest of the community. Part of this benefit, however, may be transferred to the State through special taxation or rates.

There seem no grounds for supposing that either larger or smaller numbers in Australia would appre-

ciably affect the steadiness of incomes and employment, if the regional and occupational distribution of the population remained the same.

It is obvious that if a population is of the optimum size, and conditions remain the same, it is best to keep the numbers stationary, with as low a death rate as possible. It is also obvious that any desired rate of natural increase should be attained by low death rates and birth rates, if possible, rather than high ones. It is less obvious, but worth mention, that the subjective costs of child-bearing should be set against any advantages accruing from an increasing population.

At this stage we may consider a dictum of Professor Wolfe. "A wise people, preferring more leisure to maximum income, might elect," he says,⁸ "to fix its numbers at a point below the physical optimum." This seems incorrect. The problem is essentially one of the most appropriate number of labour units per year to combine with given resources, under given conditions. For this purpose a unit of labour may be regarded as an average hour's work. The best number of units of labour, under given conditions, would be the same whether the population worked, say, fifty or forty hours per week. But if they preferred more leisure, and chose to work only forty instead of fifty hours, other things remaining the same, it seems clear that a larger, not a smaller, population would be required to supply this appropriate annual number of labour units. In other words, the optimum rises as the length of the working week shortens, other things remaining the same. A people does not get more leisure by fixing its numbers

8. "The Optimum Size of Population," p. 73, in *Population Problems* (Ed., Dublin).

below the optimum. It gets more leisure by simply deciding to have it, rather than greater income, and this decision then raises the optimum.

VIII.

A few comments may be added upon considerations which are not purely economic. In the first place, there is the question of defence. From a national standpoint, the provision of men and resources to protect a community against possible attacks by other groups, thus providing the security necessary for the maintenance and improvement of a given state of economic welfare, is mainly an economic question. There may be better ways, for example, of effecting this "insurance," whilst good or bad judgment may be shown in deciding what proportion of the national income and resources should be devoted to this purpose. Nevertheless, since Adam Smith opposed "defence" to "opulence," this topic has usually been considered a non-economic one; hence its appearance under the present heading.

In this connection it is economically believed that, *ceteris paribus*, the bigger the population, in a given area, the better. Against this it may be urged that large populations seem often tempted into wars of aggression, which in the long run usually involve economic loss, even to the victors; that a large population means a larger total income, and therefore a larger possible tribute, offering a greater incentive to groups contemplating aggression; and that under modern conditions of warfare, with air-raids, chemical weapons, and the possibility of cutting off supplies, large aggregations of people are a hindrance rather than a help. In the case of Australia, it is popularly supposed that the

“empty spaces” offer an inducement to possible aggressors, and that a larger population is desirable in order to fill these spaces. In fact, it may be doubted whether the Great Australian Desert really offers attractions to foreign groups greater than those offered by more suitable empty spaces nearer home, whilst our assumption that a larger population would not fill these spaces, but would be regionally distributed in much the same way as at present, is almost certainly correct. The best safeguards for Australia seem to be membership of the British Empire and the existence of the British Navy and the League of Nations. In the absence of these safeguards, it seems doubtful whether the difference between, say, seven millions and fourteen millions would be of appreciable significance. Nevertheless, on balance, there is perhaps a slight case for a larger population upon the grounds of defence.

In the second place, a larger population would perhaps make possible more social and cultural amenities. Although the average quality of the population remained the same, there would be a larger *absolute number* of persons with similar tastes in any given area. A larger city, for example, is more likely to support a good orchestra, a Repertory Theatre, a Film Society, a course of lectures upon a subject appealing only to a minority, a Bridge Club, an exhibition of modern French paintings, and so on, than a smaller one. It can offer more varied possibilities in entertainment, education and social intercourse, whilst affording greater inducements to eminent and accomplished persons overseas to visit and speak or perform or advise. Similarly, denser suburbs make all forms of suburban communal life more possible. Country districts would certainly gain in

social attractiveness if they contained more people: in any given area there would be more schools, societies, theatres, clubs and dances. On the other hand, those who enjoy quiet and comparative seclusion would perhaps prefer smaller numbers, whilst others would observe with sadness two cheap cars where only one rattled before. On balance, however, these considerations favour larger numbers. It should be remembered that, in fact, transport will probably become more speedy as cities spread outwards.

In the third place, there is the factor which may be termed national pride. Australia undoubtedly possesses a "national consciousness." A bigger population, it is urged, would compel other countries to pay Australia more attention, would enable her to take "her rightful place among the Great Powers," would "put her on the map." This does not seem merely a vulgar craving for size, a belief (to parody E. M. Forster) that ten million is ten times better than one million, and a hundred million nearly heaven. More people are desired because Australia has at present so few *relatively* to the leading countries of the world. To this feeling the fact that when a nation produces a cricket or football team which beats those of other countries, or an intrepid airman, or a dramatist like Ibsen, the smaller the nation the greater the glory, is not a sufficient answer. And the reality of this feeling is an additional argument for somewhat greater numbers.

In fact, the population of Australia is almost certain to continue increasing for many years to come. If, however, the birth-rate continues to decline faster than the death rate, a larger proportion of the annual increase than at present will come from net immigration.

The practical question which statesmen have to face is whether the rate of increase should be stimulated or checked. Several allied questions have also to be considered. In what ways, if at all, should statesmanship attempt to control the economic quality of the additional population, to influence their regional distribution and their choice of occupations, and to modify the economic organisation and environment in order to provide for their absorption? An attempt to answer such questions would unduly prolong this essay. A few comments, however, may be offered.

The "White Australia Policy," whether desirable or not, will almost certainly continue, owing to the great opposition which any significant breach of it would arouse. Fundamentally, the policy is not one of discrimination against any particular races. It is a policy of discrimination against individuals of markedly lower quality than the average Australian, or possessing such different characteristics that they do not become "assimilated" into the social group. This means that our assumption that average economic quality remains constant will probably apply in fact. It also means that the chief source of immigrants will probably continue to be Great Britain.

Such immigrants, however, usually bring little capital with them. I think that, in fact, capital will increase as time goes on. If it does not, our estimate of the optimum must be lowered. In any case, our reasoning does not support a sudden increase of population (from immigration, for example) unaccompanied by any increase in capital. The estimate of ten to fifteen millions was made upon the assumption that such a population would be as adequately supplied with capital as the present one.

As time goes on, conditions may change in such a way that the optimum changes. As Dr. Dalton has pointed out,⁹ changes in the optimum may occur more suddenly, and be greater in extent, than changes in actual numbers. "Conditions," of course, include conditions in the outside world, as well as in Australia. It is interesting to notice that a change, such as a comparative shortage of foodstuffs, which lowered economic welfare and made fewer numbers advisable in the world as a whole, might on balance have opposite effects in a country such as Australia, which exports foodstuffs. As, however, no changes affecting the optimum can at present be forecasted with any certainty, we seem justified in provisionally applying our conclusions, reached under "static" assumptions, to the world of reality. It follows that Australia would gain rather than lose by a gradual increase of population, accompanied by appropriate changes in capital and organisation.

9. *Op. cit.*, p. 37.

CHAPTER XI.

THE ECONOMIC CONTROL OF IMMIGRATION.

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- I. Economic Control of Population Density.
- II. The Economic Controls of Australian Immigration.
- III. Assisted Immigration in Australia.
- IV. Absorbing Capacity.
- V. The Future.

I.

Sir Josiah Stamp, in a notable speech made before an international gathering of business men at Brussels in 1925, urged upon his hearers the necessity for intellectual honesty in facing the economic facts of national and international life. "We have," he said, "a proverbial saying that 'the wish is father to the thought.' Economic truths and principles have a nasty knack of not being as pleasant or rosy as our desires or our hopes. We experience every kind of temptation to wrap them up in pleasant language or to ignore or hide them."

Sir Josiah was referring to the large claims made and expectations that had been created for Reparation payments, the insistence upon which had done much to delay the recovery of Europe from the war. In Australia we make similar claims, and create similar expectations about our capacity to absorb immigrants, and we not only mislead ourselves, but we create international misunderstandings.

It is the object of this book to do the opposite, and, therefore, plain speaking is essential. I must ignore the warnings of Charles Dickens, whose American immigrationists declared that "We must be cracked up, sir," and of Ibsen's *An Enemy of the People*, and follow Stamp's call for candour when he said: "We have long enough followed the principle that if a statement does not appeal to us as being very pleasant, we should behave as though it were untrue."

The geographic control of settlement and the future of population in relation to primary and secondary industries are dealt with elsewhere in this book. It is inevitable, however, that I shall deal to some extent with both of these subjects in treating of the resources which are available for immigration.

The economic controls of immigration are naturally more severe than the geographic, which are part of the economic. They may be classified as follows:—

1. The resources of the country for the production of goods and services, including primary production, manufacturing and commercial activities generally.
2. The capacity of mankind to utilise resources and to make them economic.
3. The extent to which economic resources have been exploited, especially in the particular country.
4. The "lag" in the movements of enterprise, capital and labour.
5. The extent to which resources are free from economic and other restrictions, especially in the particular country.

6. The rate of natural increase among the native-born in that country.
7. The extent to which the standard of living is higher there than in other countries.

This is not the place to discuss each of these controls, which of course operate together. But I shall explain them shortly. In the world at large there is constantly going on a race between growing population plus growing wants, and physical resources plus human resources. There is also a considerable mobility of enterprise, capital and labour, not so much as economists have often assumed, but still enough to allow a presumption that these elements will flow to the most profitable employment unless restricted. They will flow to any particular country according to its relative attractiveness, which is not entirely an economic consideration, but the relative richness of its unexploited resources is the chief drawing power. Enterprise and capital are the most mobile, and labour (or population) the least, while restrictions may be of various kinds, legislative or social, and may apply in the countries of emigration or of immigration, or in both of them, and in differing degrees. Finally, an increase in population from outside a country is limited by the increase inside it, and all of the elements are expressed in the standard of living, which is the attraction to immigrants.

These controls explain the densities of population in the different continents and in the countries selected for illustration in the following table:—

Countries.	People per Sq. Mile.	Dominant Controls.	
		Resources.	Standard of Living.
Europe	127.56	Good	Fair
Asia	65.23	Fair	Poor
Africa	10.60	Poor	Poor
North & Central America	17.52	Good	Very good
South America	9.50	Good Primary	Fair
Australia	2.07	Fair	Excellent
<hr/>			
Great Britain	477.71	Good throughout	Good
Belgium	664.56	Good throughout	Fair
U.S.A.	38.70	Very good throughout	Excellent
Japan	320.11	Fair throughout	Poor to Fair
Java (approx.)	600.00	Excellent primary	Poor
Australia	2.07	Fair	Excellent

Without some such explanation, figures of density are meaningless and misleading; indeed, the crudeness of the measurement illustrates the primitive condition of this subject.

The excellent statistics of the Commonwealth Bureau allow of the following information being supplied for the white population of the Australian States in 1926. The figures are calculated from tables published in the *Commonwealth Year Book*, No. 20, and the *Production Bulletin*, No. 20. (See p. 277.)

II.

The factors controlling Australian immigration are (1) the resources available, (2) the standard of living, and (3) the restrictions imposed. I must postpone further discussion of resources. The standard of living is protected directly by legislation, and indirectly by legislation which prevents immigration from low standard countries. Australians desire not only a white Austra-

Relation of Population to Economic Land in Australia.

	N.S.W.	Vic.	Q'land.	S. Aus.	W. Aus.	Tas.	Aus.
People per sq. mile	7.59	19.48	1.32	1.49	0.39	8.19	2.05
Percentage of urban populations	67.80	62.29	52.07	59.98	59.34	50.52	62.10 ^b
Percentage of economic (occupied) land ^c	90	75	77	56	42	52	58
Rural population per sq. mile of economic land ^d	2.37	8.53	0.67	0.92	0.30	7.84	1.15
Agricultural area: Sq. miles, 1925-26 ^e	14,068	10,760	1,940	14,431	11,567	881	53,660
Persons employed per sq. mile of present agricultural area	6.4	8.8	41.4 ^g	2.4 ^h	2.5 ^h	19.0 ⁱ	6.4
Area under crop: Sq. miles, 1925-26	7,095	6,927	1,615	5,600	4,581	416	26,240
Persons employed per sq. mile of present area under crop	12.8	13.7	49.7 ^g	6.2 ^h	6.3 ^h	40.1 ⁱ	13.1

Notes: (a) At the census of 1921.

(b) This figure includes the Northern Territory, which had in 1921 36.18 of its population urban, and 44 per cent. of its area "occupied" or economic land. Its rural population in 1921 was 0.11 per sq. mile of economic land.

(c) The bulk of this is pastoral land. The unoccupied land is at present worse than useless, because it creates costs of transport across or around it. The figures are for 1921.

(d) At the census of 1921 and for all occupations.

(e) Only 1.8 per cent. of Australia is "mainly devoted to agriculture," and about half of that is under crop. The figures are not quite complete.

(f) Including 17 per cent. of females, chiefly in dairying. The figures are for persons principally employed in farming and dairying (*Production Bulletin*, p. 45).

(g) This density is due to sugar and dairying. Sugar produced half the value of crops in 1925-26, and dairy produce two-thirds of the whole value of crops in addition.

(h) Wheat dominates in these two States and employs less labour than other crops.

(i) Tasmania has the most intensive cultivation, except Queensland sugar production.

lia, but a British Australia, as is shown by the popular resentment against Italian immigration. After these three factors, the relative standard of living in Great Britain and the relative attractiveness of other countries to British emigrants are the chief determinants.

Australia and New Zealand suffer more than other countries from the natural "lag" in the movement of people by reason of their distance, and the risk involved in being unable to return should the migrant be disappointed. The payment of outward passages is of little help in reducing this "lag," for it is the return passage which hampers the prudent; indeed, free or subsidised outward passages may only attract the imprudent, and encourage the prudent to go elsewhere to countries where "good wine needs no bush," and migration is not associated with "doles." The word "migrant" has come into use because "immigrant" seemed to suggest social inferiority. But "migrant" soon catches the same association."

In these days news travels fast, and news of opportunities in other countries travels fast also. During the nineteenth century it travelled so fast from the U.S.A. that waves of humanity swept across the Atlantic such as were unprecedented in history. It needed no assistance nor propaganda from Government agencies, but at times it was too great for the absorbing power of the "New World," and reactions followed. To-day news travels much faster, and the news that influences action is not the official advertisement, but the news in private letters. Any unusual unemployment in Australia is heard of in Great Britain, and although the "lag" in news is still very great, it is not as great as in former days. Attempts to foster immigration are checked by

unemployment from any cause, and if the unemployment is due to high wages a reduction in wages would have the same effect in reducing immigration, for the attractiveness would have disappeared. Governments can do very little to stimulate the tide of net migration, unless they are also able to stimulate investment and enterprise.

Both the Australian and the British Governments are attempting to stimulate these; the Australian Governments by their expenditures on development schemes and through the efforts of the Commission for Development and Migration. The British Government is assisting by conditional subsidies, with the object of transferring some of its present surplus population. Through these subsidies some of the resources at present unprofitable will be exploited at a cost to the taxpayers. In Great Britain the relief given to the Unemployment Insurance Fund might leave the taxpayer at an advantage, and in Australia the cost might be met by increased taxable capacity. It is possible also that the various Government aids to research and the Development Commission itself may discover resources which private enterprise is neglecting, and which may nevertheless prove profitable to the community. Private enterprise does not spend itself on the less profitable resources when others are available in other countries. Australia has a large volume of such resources, and it is therefore a specially appropriate field for scientific investigation. Our Governments can do this to stimulate population, but very little more. Borrowed money will do more while its expenditure lasts; subsidies to settlement through taxation will stimulate population where they are spent, and discourage it where the taxation is felt, but the limits to what Governments can do in this, as in other things, are very real and very stubborn.

III.

These facts account in a general way for the disappointing results so far experienced in the promotion of migration to Australia. Never have the external possibilities of that migration been so favourable, for the surplus population of Great Britain has no obvious opportunities elsewhere, and it remains at home. The great period of migration to the U.S.A. and elsewhere has come to an end. Never have the conditions of migration been so attractive, despite the countervailing influence of unemployment and other relief given to destitution in Great Britain. Never have people been so willing to migrate nor so easily reached by propaganda. Never before has the idea of migration been so popular and so strongly supported by non-Government agencies, both in Great Britain and in Australia. Yet the high hopes of redistributing the Empire's population which were entertained after the war, and especially in and regarding Australia, have been and continue to be disappointed.

In 1922 the British Parliament passed an Empire Settlement Act, and organizations were created to carry it out. In 1924 a Delegation visited Australia, and the following year an agreement was made by which the British and Australian Governments were to subsidise passages to Australia. In addition, the famous Loan Money Agreement was established. Under this agreement a sum of £34,000,000 was provided at specially low rates of interest for the Australian Governments, on condition that immigrants were actually settled.

The Australian Minister for Migration announced (on October 14th, 1925) that on the most favourable conditions, the British subsidy for interest would amount to

£12,500,000 over a period of ten years, and also about one-third of any capital loss on farmers settled under the scheme. The agreement required the settlement of 450,000 immigrants, and it was said that the numbers were to increase from 31,500 in the first year to about double that number in the last years of the period. In 1926, the year following the agreement, 31,260 were assisted, and the total net migration was 42,220. The annual average between 1920 and 1926 had been 23,400 immigrants assisted under previous agreements, and a total net migration of 34,400. The last figure roughly represents the absorbing capacity of Australia in proportion to population over a long period of years. In 1927 the total net migration reached 48,924. The first quarter of this year ended with only 73 per cent. of the net migration for the same quarter of 1927, and a record figure of 10.7 per cent. for unemployment.

It should be remarked that the conditions intended to appertain to the agreement have not been carried out fully. The slogan of the agreement was "men, money, and markets." The idea of markets was that preference (or protection) should be given in Great Britain to the produce of the settlers in the Dominions. The idea of money was inadequately expressed by a loan allowance of £1,000 per farmer and less for others. This has not been accepted because of the conditions of actual settlement required. The marketing assistance has however, been provided by subsidies in Australia, and the inadequacy of the money has been more than made up by the borrowings of Australian States. Indeed, the immigrants have been absorbed partly by reason of the expenditure of these loan monies, and not by production. Private investments from overseas have been

prominent in recent years, owing to the establishment of industries through the tariff, and the State loan expenditures since 1921 have averaged £32,000,000 a year. This is nearly as much in one year as the Migration Agreement provided for ten years.

IV.

Space does not permit me to analyse the resources available in Australia for the absorption of immigrants, but I should point out a few material facts. The past and present absorbing capacity of Australia has been and is high, because of the large loan expenditure which is being used to equip the country with public works. The burden of our pre-war debt has been greatly reduced by the war-time inflation of money values, and we have been enabled to increase the debt per head in Australia since the war. This increase in debt is good or bad according to the investments made, and is not in question here, but it has increased the demand for labour and promoted immigration.

Part of the capital expenditure has been on private manufacturing enterprises promoted by the tariff, and part of the immigration has been attracted by the permanent employment offered by these industries. They are most suitable for the type of immigrant we can attract and are allowed to canvas in Great Britain (we are not encouraged to canvas the agricultural labourer): but the employment created by these industries is partly at the expense of the rural industries, especially of those which export, for these bear the cost of protection. Moreover, there is some limit to the expansion of industries protected for home consumption: the limit is the extent of that consumption. Between 1920-21 and

1925-26 the *natural* increase of population in Australia, without immigration, was over 10 per cent., and the males employed principally in farming and dairying increased by only 5.5 per cent., while the males employed in factories increased by 16.4 per cent. Such a disproportionate growth cannot continue in a country which cannot export its manufactures. The increase in farm workers was wholly in the younger States of Queensland and Western Australia, and much of this was due to tariff protection and other assistance.

Australia is still a new country in the same position as a business undergoing capital construction, with the difference that an unprecedented proportion of the capital is invested by Governments. This is not the result of the popularity of such methods in Australia, for the popularity of such Government investments is partly due to the fact that private investments on similar lines are unprofitable. This fact is of great significance for its bearing on the quality of our agricultural resources where railways and irrigation are required. While the capital construction continues, employment continues. When a road or a railway is completed, some of the workmen who have been employed on its construction may go on the land it makes profitable, or into the industries which expand elsewhere in consequence of extended settlement; or if they do not go, others may go in their place. But the slowness of the increase in farm workers does not suggest that the land opened up absorbs the same number of men as are occupied in its "development." When, therefore, the constructional expenditure slackens (either from choice or compulsion) we must expect the employment to slacken also. And if employment slackens, the rate of immigration must slacken also.

It should be remembered that this rate is not low when compared with American experience during the last century, and that the normal absorbing capacity at present for Australia is between 35,000 and 40,000 immigrants per year. It is difficult to see how Australia can provide for its own natural increase *and* the present rate of immigration, when the present abnormal conditions come to an end. These are (1) the loan expenditures, (2) the expansion of protected industries, and (3) the expansion of farming on the richer lands in the relatively undeveloped States.

In the older parts of Australia farming does not expand, despite a degree of Government assistance which, for Australia as a whole, equals the cost of the protection given to manufactures. The wages paid on farms do not attract immigrants, nor can the immigrants be established on farms except at a loss: nor can they be induced to remain even when established. The immigrant naturally follows and competes with the native-born in the more attractive employment, and the *assisted* immigrant, with little or no personal property sunk in the land, too often continues to be a migrant. It is useless to blame him or the standard of living which attracts him to other work, for it is that standard which has attracted him to Australia.

The geographical conditions of Australia are doubtless responsible for the difficulties experienced, as they are reflected in the economic facts. I have before me a Paper on "The Resources of Australia," prepared by Professor Griffith Taylor for the second general session of the Institute of Pacific Relations, which met at Honolulu last year. Professor Taylor is well known as an authority on geography, and he has taken the first

step towards a survey of possible resources by calculating the area which is climatically suitable for crops. He estimates this area to be 717,000 square miles, and he expressly stated that "no allowance is made for rugged topography, for poor soils or any other factors which will cut out much of the area." He is unable to say how much of the area is economically practicable, but on an analogy from the U.S.A., he reduces it by three-quarters to 179,000 square miles, which is 332 per cent. of our present area "mainly devoted to agriculture." Unfortunately, the analogy with America breaks down on transport conditions, even if an analogy were valid at all, for Australia has no river systems for cheap transport. Topography, soil, and transport costs are quite as important limitations as climatic ones. In Tasmania, for example, the analogy would give 15 per cent. of its area as suitable for farming, but Tasmania has only 1.7 per cent. of its area under crop and it is losing population. The gap between 15 per cent. and 1.7 per cent. is too great to allow of the analogy having any validity.

But actual experience is a better guide than estimates which are so precarious that no business investments follow them, and the only investments offered are Government ones. We are not so "new" a country as to be without practical experience. The figures I have given tell the story of this experience, and if they appear to turn such a notorious "pessimist" as Professor Griffith Taylor into an "optimist," some other explanation is necessary to overthrow them and their significance for the future of immigration. In this connection optimism and pessimism are not arguments but merely terms of abuse.

V.

Australians have chosen to confine their population as far as possible to their own race, partly for social reasons and partly to protect their standard of living. They have chosen, therefore, not to use the poorest of their resources, and not to achieve the maximum of production, since the maximum production could only be achieved with a standard of living approaching that of Asia. This policy has been challenged in Europe rather than in Asia, and on economic grounds. The *economic* answer to this challenge has been supplied by Professor Cannan, of the University of London. The last words of his book, *Wealth*, deal with the spreading of over-population by emigration from one country to another. Of such a people, he wrote, "It is better that it should learn that over-population is an evil, and how to avoid it, in one country or continent, than after extending it all over the world." The *social* answer may be that we should increase our population the better to defend ourselves (supposing that we are in danger of attack), and if this destroys the economic justification of White Australia, by reducing our standard of living, the economist has nothing to say except to point out the fact. It is an economic truism that the standard of living depends on the number of appetites in relation to the volume of resources, whether these appetites are of sheep on pastures, cabbages in gardens, trees in orchards, people in households, or population in a country.

Are we, therefore, to resign ourselves to the belief that Australia cannot cultivate even 2 per cent. of its area and maintain its present standard of living? By no means. Like other native-born Australians I resent

the possibility. I cannot escape the facts, and it is my duty to expose economic facts just as it is the duty of a biologist to expose biological facts. It is not my duty to speculate on the future, but I have sufficient faith in my countrymen to believe that they will tackle the problem of their "potentialities" when they require to do so. Indeed, our Governments are already tackling them. There remains only one thing more which I can do in this chapter: to give some of the significant economic facts of the past for the light they may throw on the present, and perhaps also on the future.

Before our ancestors came to Australia, the possibilities of its northern parts must have been known to the wandering Polynesian and Asiatic voyagers, who spread themselves over the South Seas as far as New Zealand. And when the white men came first they discovered these parts also, but failed to discover our fertile lands in the remote south-east. Australia was an international discovery: Dutch, Portuguese, Spanish, English and French all contributed. All came and all went away. The character of our aboriginal population is a sufficient explanation, and Australia did not begin as a trading station. It did not begin until scientific interest stimulated the voyages of Captain Cook, and even then it was only thought worth an incidental investigation. It was thought fit only for convicts who could have no means of escape, either inland to independent settlements or by sea. And it was the fear of French scientists which led to military settlements elsewhere.

Australia did not begin to be self-supporting until its aptitude for wool was discovered and exploited. Since then wool has continued to be the chief source of income and the chief obstacle to agricultural settlement. The

gold period came and went, and after it other metal mining also. The rich farmlands have gradually been taken up, nearly always with some Government intervention, and manufactures have been stimulated by the tariff. We have been pushing back the frontier of occupation and cultivation, but there still remains half of our territory to be subdued. The time is coming when there will be a struggle between our growing population and our human resources, and every battery of science will be required for the defence of our standard of living.

Our own history should give us our cue. Our national heroes have been explorers and scientists. French and British navigators explored our coasts, and the scientists, Sir Joseph Banks and Captain Nicholas Baudin, stirred our forbears into action. The epics of our inland explorers added glory to the tradition. We are passing through a happier period based on the richness of our best lands, but our future rests with the Banks and Baudins of to-morrow.

APPENDIX.

Attention is drawn to an excellent statement upon Assisted Migration published by the Commonwealth Government (August, 1928) and obtainable from the Secretary, Development and Migration Commission. The following extracts are taken from that report:

Classes of Migrants.

Assisted migrants may be classified in two main divisions, viz., nominated and selected. Nominated migrants are those nominated by relatives or friends resident in Australia, who accept responsibility for the maintenance and welfare of their nominees. Selected migrants are those recruited in bulk at the request of the State Governments, such as farm workers and domestic helpers.

Number of Assisted British Migrants.

The first assisted migrants under the Commonwealth and State Migration Scheme sailed from Great Britain in March, 1921. The following shows the numbers of assisted migrants who arrived in each State up to 31st December, 1927:—

State.	No. of Migrants.
New South Wales	53,374
Victoria	56,024
Queensland	16,314
South Australia	10,777
Western Australia	32,023
Tasmania	1,993
Federal Capital Territory	24*
Total	170,529

*Only applies from 1st January, 1927.

The following statement shows a classification of arrivals of assisted migrants in the respective States, for the year 1927:—

State.	Land Settlement	Scheme Settlers.	Special Farm Workers.	Other Farm Workers.	Fairbridge Farm Boys.	Dreadnought Boys.	Barnardo Boys.	Wemby Scholars	Little Brothers.	Salvation Army Lads.	Church of England Lads.	Farm Learners.	Young Australia League.	Domestics.	Barnardo Girls.	Nominees.	Total.
New South Wales .	29	..	..	17	..	865	98	50	..	20	..	..	..	670	38	8,473	10,260
Victoria ..	71	360	1,189	..	..	..	..	..	261	137	6	252	..	430	..	6,143	8,849
Queensland ..	..	..	6	..	..	..	..	..	..	104	246	177	..	213	..	2,758	3,504
Western Australia	192	499	926	..	14	..	..	..	..	112	..	2	36	401	..	2,697	4,879
South Australia ..	..	..	4	..	..	..	..	..	48	..	..	2	..	159	..	2,207	2,420
Tasmania ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	189	189
Federal Capital Territory	24	24
Totals ..	292	859	2,142	14	865	98	50	309	373	252	433	36	1,897	22,467	30,125		

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